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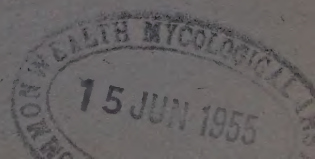
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THE
VETERINARY BULLETIN

Vol. 25]

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[No. 6

DISEASES CAUSED BY BACTERIA AND FUNGI

- MCDIARMID, A. (1955). **Staphylococcal pyaemia in a wild hare (*Lepus europaeus occidentalis*)**. — *J. comp. Path.* **65**, 17-19. [Abst. from author's summary.] **1558**

The author described a pyaemia due to *Staph. aureus* in a wild hare. There were no signs of external injury and no tick infestation. He suggested that the hare may act as a reservoir host for a species of organism potentially pathogenic to domestic stock and man.

- GOULD, J. C. & ALLAN, W. S. A. (1954). ***Staphylococcus pyogenes* cross-infection: prevention by treatment of carriers**. — *Lancet*, **267**, 988-989. [Authors' summary modified.] **1559**

Nasal carriage by cross-infection in the ward was considerably reduced for three months by the intranasal application of oxytetracycline cream to carriers for ten days, and this resulted in a fall in the number of cases of hospital infection due to the staphylococcus.

- MURRAY, J. & CALMAN, R. M. (1955). **Control of cross-infection by means of an antiseptic hand cream**. — *Brit. med. J.* Jan. 8th, 81-83. **1560**

The authors described lab. tests of the efficiency of a proprietary antiseptic hand cream containing 1:6-di-4'-chlorophenyldiguanidohexane ("hibitane") [See also *V.B.* **24**, 3632] in the suppression of "resident" bacteria on the skin and in the prevention of transmission of bacterial infections by the hands. The antiseptic had excellent persistent qualities. During a period of 18 months when the cream was regularly used by the staff of a maternity hospital no group outbreaks of staphylococcal infection occurred in the wards or nurseries, whereas such infection had formerly been common.—F.E.W.

- PATTISON, I. H. & SMITH, I. M. (1954). **The effect of oxytocic principle on experimental**

- Str. agalactiae* mastitis in cows**.—*Vet. Rec.* **66**, 724-726. [Authors' summary copied verbatim.] **1561**

Intravenous injection of oxytocin had no effect on the course of an experimental *Str. agalactiae* mastitis in cows. At the dosage employed a combined therapy of oxytocin and penicillin proved no better than penicillin alone in treating the disease.

- DE VUYST, A. & HENRIET, L. (1954). **Stérilité infectieuse provoquée par le streptocoque hémolytique. [An infectious sterility in cattle caused by a haemolytic streptococcus]**. — *Ann. Méd. vét.* **98**, 179-181. **1562**

A note on sterility in cattle clinically similar to that caused by trichomoniasis, but the authors claimed that a haemolytic streptococcus was the only organism present. [They gave no details of any steps that may have been taken to establish the absence of other organisms.]

—F. L. M. DAWSON.

- GREGG, L. A. & ROBERTSON, O. H. (1953). **On the nature of bacteremia in experimental pneumococcal pneumonia in the dog. II. Disappearance of pneumococci from the circulation in relation to the bactericidal action of the blood *in vitro***. — *J. exp. Med.* **97**, 297-314. **1563**

The authors compared the bactericidal properties of blood in a state of bacteraemia and also of non-bacteraemia in dogs. They discussed the phenomenon of the role played by humoral immune substances in the bactericidal action of blood.—E. A. HIRSCH.

- KESSENS, B. H. (1954). **De isolatie van *Sarcina flava* bij endocarditis valvularis van het varken. Gevolgd door een beschouwing o.a. over de beoordeling van slachtdieren met apathogene of weinig pathogene kiemen. [Isolation of *Sarcina flava* from valvular lesions of the heart in pigs. Meat inspection**

judgment in this condition.]—*Tijdschr. Diergeneesk.* **79**, 721-726. [English, French and German summaries.] **1564**

Sarcina flava was isolated from lesions of endocarditis verrucosa in two slaughter pigs. Visible growth on agar and in glucose broth developed after incubation for 2 days. For meat inspection incubation overnight only is insufficient to obtain cultures from carcasses.

—C. A. VAN DORSSEN.

MCGAUGHEY, C. A. & ST. GEORGE, C. (1955). Isolation of *Bacillus anthracis* from soil: the use of Pearce and Powell selective medium. —*Vet Rec.* **67**, 132-133. [Authors' summary slightly modified.] **1565**

B. anthracis was isolated with comparative ease, from eight samples of soil in Ceylon, using the selective medium and the technique described by Pearce & Powell [*V.B.* **21**, 2816].

ROBINOW, C. F. (1953). Spore structure as revealed by thin sections. — *J. Bact.* **66**, 300-311. **1566**

A study of thin sections of the spores of *Bacillus cereus* and *B. megatherium* under electron microscopy revealed that the coat of the spores of the former consists of a single membrane while that of the spores of the latter consists of two major layers in which there appeared to be several finer membranes. Forty-four photomicrographs were reproduced.

—J. D.

PULLAR, E. M. & RUSHFORD, B. H. (1954). A routine for tuberculin testing large numbers of pigs.—*Aust. vet. J.* **30**, 341-344. **1567**

The authors described the arrangements for organizing the tuberculin testing of a large herd of pigs.—K. G. JOHNSTON.

PÉRÈS, G. (1952/53). Au sujet de la résistance à la tuberculose chez les chiens vaccinés par le B.C.G. et par des germes morts. [Resistance to TB. in dogs vaccinated with B.C.G. or with killed tubercle bacilli.]—*Bull. Soc. Sci. vét., Lyon*, **54** & **55**, 189-191. **1568**

A note on work carried out by Salvioli *et al.* on dogs in Italy [*V.B.* **23**, 2990]. No new work.—G. V. LAUGIER.

HILDEBRANDT, K. (1954). Katalaseprobe als Diagnosticum der Darmtuberkulose. [Catalase test of faeces in the diagnosis of intestinal TB.]—*Dtsch. tierärztl. Wschr.* **61**, 243-244. **1569**

The determination of faecal catalase is of little value as an aid to the clinical diagnosis of intestinal TB. in animals.—W. G. SILLER.

ANON. (1954). Bovine type of tuberculosis in man. — *J. Amer. vet. med. Ass.* **125**, 480-481. **1570**

In the U.S.A., bovine type TB. in man is a very rare disease, only 6 proven cases out of 34,000 deaths from TB. having been reported since 1950. Only if occurring in a child, can the disease be definitely attributed to a recent infection of animal origin.—A. ACKROYD.

FIASSON, R. & DIALLO, R. (1953). Epizootie bovine à Nouvelle-Amsterdam. [An epizootic in cattle on the island of New Amsterdam (Johne's disease?)]—*Rev. Elev.* **6**, 1-8. **1571**

A very interesting account of the behaviour of Johne's disease on a very isolated island in the centre of the Indian Ocean.

The first cattle taken to the island were taken from Amsterdam by a family which attempted to colonize it in 1871. The attempt at colonization was soon abandoned and the cattle were left to run wild. They multiplied and it is estimated the stock numbered about 2,000 head in a few years. Since then the island has been uninhabited except for a meteorological and wireless station. In 1951 eight sheep were taken to the island from France and it is thought that they must have introduced Johne's disease. Since 1952 there has been a very heavy mortality from Johne's disease; about 30% have died. Very interesting information on the habits of the cattle, the nature of the pasture, plants, water supply etc. are given.—E. J. L. SOULSBY.

SIGURDSSON, B. (1954). Paratuberculosis (Johne's disease) of sheep in Iceland. Immunological studies and observations on its mode of spread.—*Brit. vet. J.* **110**, 307-322. **1572**

Five foci of Johne's disease were established by sheep imported into Iceland in 1933. The annual mortality is about 10% where the disease has been present for 2 years. Spread is slow and continuous. A drastic area slaughter policy twice failed. Avian type tuberculin is of limited value for diagnosis. A c.f. test using antigen prepared from infected mucosa is better. Vaccine prepared from heat-killed *M. johnei* in mineral oil showed promise in a field trial.—C. C. BANNATYNE.

BEAMER, P. R., VARNEY, P. L., BROWN, W. G. & McDOWELL, F. (1954). Studies on *Malleomyces pseudomallei* isolated from melioidosis originating in the Western Hemisphere. — *Amer. J. clin. Path.* **24**, 1231-1240. [Authors' summary modified.] **1573**

The authors isolated a strain of *Pfeifferella whitmori* from 2 patients with chronic melioidosis. Neither had ever left the Western Hemisphere, and one had never left the U.S.A.

They reviewed the essential features of the clinical histories, and gave the P.M. findings in one patient. They summarized the characteristics of the 2 strains and the results of sensitivity tests with antibiotics in experimental animals.

Certain strains may resemble other bacteria that occur more commonly in bacteriological cultures, so that there is a danger that melioidosis may be overlooked or diagnosed incorrectly.

MURASE, N. & SHIMIZU, F. (1953). **Studies on swine erysipelas. I. Relations between infection and immunity in mice.**—*Exp. Rep. Govt. exp. Sta. Anim. Hyg., Japan*, No. 27, pp. 185-196. [In Japanese and English.] 1574

Mice vaccinated with living organisms of low virulence or trypaflavine-resistant strains of *E. rhusiopathiae* which were capable of multiplying in the body, were resistant to challenge with a virulent strain of the organism, whereas mice vaccinated with vaccines prepared from killed virulent organisms or from living wholly avirulent strains, either natural or trypaflavine resistant, which were incapable of multiplying in the body, had no such resistance.—A. ACKROYD.

ASAHI, O., HOSODA, T., AKIYAMA, Y. & EBI, Y. (1953). **Studies on listeriosis in domestic animals. I. Listeriosis in goats found in Aomori Prefecture.**—*Exp. Rep. Govt. exp. Sta. Anim. Hyg., Japan*, No. 27, pp. 289-300. [In Japanese and English.] 1575

Since 1950, a few cases of purulent encephalitis have occurred in sheep and goats in Japan. The authors described the clinical features, and pathological and bacteriological findings in 2 infected goats. An organism probably identical with *Erysipelothrix (Listeria) monocytogenes* was isolated from the brains of these goats.—A. ACKROYD.

OROBINSKI, I. I. (1954). [Listeriosis-like disease in sheep.] — *Veterinariya, Moscow*, 31, No. 11, pp. 46-48. [In Russian.] 1576

In the Krasnoyarsk district a disease has been observed in sheep, the main symptoms of which are due to lesions of the c.n.s. Starting with spasmodic movements of the head, the animals lose co-ordination of movement, go into epileptic fits and die in coma. From the

organs and the brains of these sheep a *Listeria* type of organism was isolated. The R form produces a green diffusible pigment.

—A. MAYR-HARTING.

LEADER, R. W. & HOLTE, R. J. A. (1955). **Studies on three outbreaks of listeriosis in chinchillas.** — *Cornell Vet.* 45, 78-84. [Authors' summary modified.] 1577

The authors reported 3 outbreaks of *Erysipelothrix (Listeria) monocytogenes* infection on different ranches in Washington, U.S.A. for breeding chinchillas. They described the gross and microscopic lesions of field and experimental cases. The organism was identified by cultural isolation and animal inoculation.

BAIN, R. V. S. (1954). Immunisation contre les pasteurelloses des bovins. [Immunization against bovine pasteurellosis.] — *Bull. Off. int. Epiz.* 42, May, pp. 256-266. 1578

Serological grouping experiments showed that haemorrhagic septicaemia of cattle in South East Asia was caused by one main type of *Pasteurella*, viz., *Past. multocida*, Type I (Roberts). Other serological types were met with but not frequently enough to justify the general use of a polyvalent vaccine.

Results obtained seemed to indicate that the immunizing power of the vaccine against this type was due to the presence of an antigen analogous to the "Vi" antigen of *Salmonella typhi* and to the use of an adjuvant. It was not known whether the vaccine effectively immunized animals exposed to natural infection in unfavourable climatic conditions.

—T. E. GATT RUTTER.

SMITH, C. H. (1954). **Relationship between haemagglutination and pathogenicity in strains of *Haemophilus* isolated from the eye.** — *J. Path. Bact.* 68, 284-287. [Author's summary modified.] 1579

A haemagglutinin was found more frequently in strains of *H. influenzae* isolated from lesions of the conjunctiva of human beings than in those from cultures from specimens collected as a routine before operations on eyes. In contrast to the findings of Davis *et al.* (1950), a haemagglutinin was present less frequently in strains isolated from acute conjunctivitis than in strains from other types of ocular infection.

KOSTENKO, P. P. (1953). [Treatment of *Bact. coli* infection in foals by intravenous injection of maternal blood.] — *Horsebreeding, Mosk.* 23, No. 5, pp. 40-42. [In Russian.] 1580

Colibacillosis in foals starts 2-3 days after

birth and often runs a rapid course ending in death. K. reported successful treatment by the use of 20 ml. of the dam's blood transfused to the foal, an emulsion of ichthyol and opium in a chamomile infusion being given *per os*, the latter being repeated daily if necessary. To raise the resistance of new-born foals a transfusion of maternal blood is now given a few hours after birth. No case of colibacillosis had occurred in foals so treated.

—A. MAYR-HARTING.

MANSON, L. A. (1953). **The metabolism of ribonucleic acid in normal and bacteriophage infected *Escherichia coli*.**—*J. Bact.* **66**, 703-711. **1581**

The renewal of ribonucleic acid indicated by the incorporation of glycine-2-C₁₄ in the purines of *Bact. coli* is very slow in both normal and phage-infected cells. The ribonuclease of the organism acts only when the cell is disrupted mechanically or by phage.—A. SEAMAN.

DÉOM, J. & MORTELMANS, J. (1954). Over een geval van abortus bij het rund in verband met *Salmonella dublin*. [**Abortion in a cow associated with *Salmonella dublin* infection.**] *Vlaam. diergeneesk. Tijdschr.* **23**, 290-292. [English, French and German summaries.] **1582**

S. dublin was isolated from the stomach content of a 6-month aborted bovine foetus.

I. GALTON, M. M., LOWERY, W. D. & HARDY, A. V. (1954). ***Salmonella* in fresh and smoked pork sausage.**—*J. infect. Dis.* **95**, 232-235.

II. GALTON, M. M., SMITH, W. V., McELRATH, H. B. & HARDY, A. V. (1954). ***Salmonella* in swine, cattle and the environment of abattoirs.**—*Ibid.* 236-245. **1583**

I & II. As the result of an outbreak of salmonella infection in dogs fed livers purchased in the local abattoirs, the authors investigated the presence of salmonella in meat used for sausage manufacture and found that pork was the main vehicle of the infection and beef rarely so. Indications were that pigs with clinical or subclinical salmonella infection were brought into close contact with healthy pigs during marketing, transit to abattoir and during lairage there, and so infected them. Infection of carcasses was further spread by abattoir equipment.

The authors discussed the public health aspects of these findings.—R. MACGREGOR.

COPE, E. J., APPELHOF, W. K. & MARTINEAU, P. C. (1955). ***Salmonella* isolated from**

animals, birds, and reptiles in a metropolitan zoo.—*Cornell Vet.* **45**, 3-9. [Authors' conclusions modified.] **1584**

Salmonella organisms were isolated over a period of 3 years from 10% of the mammals, birds, and reptiles studied at the Detroit Zoological Park, which included newly acquired specimens, animals that were ill and those which died. Seventeen different types of *Salmonella* were included in this number. In addition, an organism of the Arizona paracolon group was isolated from four animals and *Shigella* from five. The authors discussed these findings in relation to public health and from the point of view of those responsible for the well-being of the animals.

SMITH, H. WILLIAMS. (1955). **Observations on experimental fowl typhoid.**—*J. comp. Path.* **65**, 37-54. [Author's summary modified.] **1585**

A disease closely resembling fowl typhoid was consistently produced in chickens by the oral administration of *S. gallinarum*. Infection took place *via* the intestinal tract. Localization then occurred, principally in the intestinal wall, the liver and the spleen. This was followed by a bacteraemic phase which terminated either in death or in the chronic form of the disease which was characterized by the development of proliferative lesions, mainly in the heart wall. Fatal cases of the chronic form, however, were usually associated with the presence of intestinal lesions.

Day-old chicks were the most susceptible to fatal infection. Susceptibility then decreased with age, but increased again with maturity. Both sexes were equally susceptible.

Of 300 infected 9-week-old cockerels, 45% died in the acute phase of the disease and 15.7% in the chronic phase. Deaths usually began to occur 7 days after infection, reaching a peak on the 8th to 14th day; very few deaths took place after the 20th day.

Some chickens continued to excrete the organism in the faeces for 2-3 months after infection, but the number of organisms excreted was invariably small. The presence of the organism in the faeces was always associated with foci of infection in the tissues, particularly in the intestinal wall. The gall bladder was much less commonly involved.

The rapid whole blood agglutination test was very reliable in identifying infected chickens when it was employed 20 or more days after infection.

When clinically-recovered chickens were exposed to a massive infection by mouth or

intravenously they remained healthy and the organism could not be isolated from their faeces.

SMITH, H. WILLIAMS. (1955). **The chemotherapy of experimental fowl typhoid in fowls (*Gallus domesticus*)**. — *J. comp. Path.* **65**, 55-70. [Author's summary modified.] 1586

Furazolidone was greatly superior to sulphonamides, dihydrostreptomycin, chloramphenicol, terramycin and aureomycin in the treatment of experimental fowl typhoid in day-old chicks and 9-week-old chickens. It was bactericidal for *S. gallinarum* in low concentrations whereas the other agents were only bacteriostatic. Penicillin treatment was valueless.

The occurrence of faecal excretors of *S. gallinarum* was very uncommon amongst chickens that had been treated with furazolidone. A concentration of 0.04% was necessary to achieve this when furazolidone was given in the mash, administration being continued for 10 days. Faecal excretors of the organism were found more frequently when the concentration and the period of administration were decreased. Most of the chickens treated with the other agents became faecal excretors of the organism.

Chickens treated with furazolidone early, but not late, in the course of the experimental disease developed very little immunity as evidenced by the absence of agglutinins to *S. gallinarum* in their blood and their susceptibility to re-infection. The need for instituting strict methods of sanitary control during the treatment of natural outbreaks is therefore indicated.

Furazolidone was also of considerable value in the treatment of chronic carriers of the infection.

Apart from a slight depression in the growth rate, the continuous feeding of healthy chicks and young chickens on mash containing 0.02 or 0.04% furazolidone for 3 weeks was not accompanied by any signs of toxicity.

MCCRACKEN, D. A. (1954). **Salmonella minnesota infection in Northamptonshire**. — *R. sanit. Inst. J.* **74**, 1091-1094. [Author's summary slightly modified.] 1587

An account of an explosive outbreak of food poisoning involving over 500 clinical cases caused by *S. minnesota* following the consumption of meat pies manufactured in a factory in Northamptonshire. Whilst a great variety of cooked and uncooked foods were prepared in the factory, the vehicle of infection was exclusively meat pies to which had been added, as is customary in the trade, a warm solution

of gelatin. The original source of the infection and the method by which it gained access to the factory were not ascertained with certainty.

KAUFFMANN, F. (1953). **On the transduction of serological properties in the *Salmonella* group**. — *Acta path. microbiol. scand.* **33**, 409-420. [In English.] 1588

K. was able to transduce (*i.e.*, to transfer hereditary properties from one type to another) both flagellar and somatic antigens by the use of phage-containing sterile lysates. He considered that such transductions may occur, very rarely, in nature, but that for practical purposes the salmonella serotypes can be regarded as being constant.—E. A. GIBSON.

CAMERON, H. S. & KENDRICK, J. W. (1955). **The diagnosis of latent bovine brucellosis**. — *J. Amer. vet. med. Ass.* **126**, 131-133. [Authors' summary modified.] 1589

The authors presented data from a survey of 54 herds comprising 3,570 cows, which indicated that serum titres of up to 1:200, or at least max. titres of 1:100, are not indicative of localization of *Br. abortus* infection in the udder provided there are no cows with higher titres in the herd.

ORLOV, E. S. (1954). **[Specificity of the agglutination reaction in doubtful cases of brucellosis]**. — *Veterinariya, Moscow*. **31**, No. 11, pp. 34-39. [In Russian.] 1590

It has often been found that in herds free from brucellosis some animals give a weakly positive (1:100) or doubtful (1:50) reaction to the agglutination test. This has led to doubts regarding the specificity of the test. In the opinion of the author an RSK [complement fixation test] should be done in such cases and both tests should be repeated after 2-3 weeks during which time the animal is kept isolated. If the titre of the agglutination test has not risen and the RSK remains negative, it may be assumed that the agglutination has been caused by normal antibodies. Allergic tests in such animals are always negative. No outbreaks have ever been observed on the return of non-specific reactors to the herd.

—A. MAYR-HARTING.

DAVOLI, R. & GARGANI, G. (1955). **Infezione intradermica sperimentale da brucella nel coniglio. [Experimental infection of rabbits with *Brucella* by the intradermal route.]** — *Vet. ital.* **6**, 3-19. [English, French and German summaries. Abst. from English summary.] 1591

Intradermal injection of living brucella in

rabbits gives rise to a characteristic local inflammatory reaction developing to necrosis. The skin lesion is clear-cut and its size is, to a certain extent, proportional to the number of living organisms injected. The authors tested the pathogenicity of 24 strains of *Br. melitensis*, 11 of *Br. abortus*, 4 of *Br. suis* and one of *Haemophilus bronchisepticus* when so injected. All except the latter organism provoked the characteristic lesions. So-called "avirulent" strains produced lesions similar to those produced by virulent ones and strains in the S and R-phase behaved similarly except for 3 strains of *Br. melitensis* in an extreme R-phase, which were of reduced pathogenicity. Brucella were cultured from the skin lesion and later from viscera. Regional lymph nodes were frequently involved. Agglutinating antibodies developed to a comparatively high titre. Rabbits which had been previously given repeated injections of formolized vaccines developed lesions similar to those of unvaccinated rabbits.

BERMAN, D. T., BEACH, B. A. & IRWIN, M. R. (1954). A comparison of the effects of subcutaneous and intracaudal vaccination of sexually mature cattle with *Brucella abortus* strain 19.—*Amer. J. vet. Res.* **15**, 406-411. [Authors' summary modified.] 1592

Sexually mature cattle were vaccinated with either 5 ml. of *Br. abortus* Strain 19 subcutaneously or 0.25 ml. intracaudally. There were no differences attributable to the mode of vaccination in either the titre of agglutinins or in the rate of disappearance of agglutinins. There was a greater tendency for animals to retain significant titres of agglutinins if they had been pregnant at the time of vaccination regardless of the method employed.

The animals were exposed by the conjunctival route during their third pregnancy with 12×10^6 organisms of *Br. abortus* Strain 2308. The two methods of vaccination were equally effective.

GILMAN, H. L. & HUGHES, D. E. (1955). The reinforcement of immunity to brucellosis created by calfhoo vaccination with Strain 19.—*Cornell Vet.* **45**, 101-111. 1593

Two groups of cows (a) vaccinated during calfhoo with *Br. abortus* Strain 19 and (b) similarly vaccinated during calfhoo and re-vaccinated with ether-killed *Br. abortus* suspended in an oily vehicle at the end of the first and third months of their third pregnancy, were challenged when four months pregnant by the conjunctival inoculation of 12 million organisms of a virulent strain of *Br. abortus*.

The rate of infection and of abortion was the same in each group, and it was concluded that the ether-killed vaccine was incapable of reinforcing the immunity conferred by the calfhoo vaccination.—F.E.W.

SIEIRO, F. (1954). New studies on comparative brucella immunity with agglutinogenic and nonagglutinogenic vaccines.—*Amer. J. vet. Res.* **15**, 417-424. 1594

Two groups of heifers aged 12-14 months were inoculated with either Strain 19 *Br. abortus* or a non-agglutinogenic intermediate type brucella "Strain B" [see *V.B.* **23**, 1170]. They were challenged during the last months of pregnancy by the conjunctival instillation of virulent *Br. abortus*, 12-13 months after vaccination. Of those vaccinated with Strain 19, three out of six resisted challenge with 5×10^6 organisms, and one out of nine resisted challenge with 5×10^7 organisms. The corresponding figures for those vaccinated with "Strain B" were four out of 21 and one out of 21 respectively.

In herds in which the development of blood agglutinin titres would complicate measures for the eradication of *Br. abortus* infection, the authors recommended the use of the non-agglutinogenic vaccine for the revaccination of animals vaccinated as calves with Strain 19, or for the vaccination of adult cattle, despite its apparently lower immunizing power.

—R.M.

KRONENWETT, F. R., LEAR, S. A. & METZGER, H. J. (1954). Thermal death time studies of *Brucella abortus* in milk.—*J. Dairy Sci.* **37**, 1291-1302. 1595

The authors studied the survival times of 8 strains of *Br. abortus* suspended in milk at various temperatures for various times. They found that current standard procedure in the U.S.A., in which milk is held at 143°F. for 30 min., is adequate to deal with the organisms. The method has a margin of safety of approx. 26 min.—A.S.

BUDDLE, M. B. (1954). Production of immunity against ovine brucellosis.—*N.Z. vet. J.* **2**, 99-109. 1596

In controlled preliminary tests of the protection afforded by various vaccines against challenge by i/v inoculation with 10×10^6 of the brucella organism [*V.B.* **23**, 3293] which causes disease of the genital organs of sheep in New Zealand, B. used 178 sheep of both sexes and of different ages, the vaccines used being prepared respectively from *Br. abortus* Strain 19, viable organisms of the N.Z. strain in saline,

killed organisms of that strain in saline, and killed organisms of that strain in saline-oil emulsion. In both ewes and rams simultaneous inoculation with Strain 19 and with killed organisms of the N.Z. strain in saline-oil emulsion gave sufficiently promising results to warrant more extensive controlled trials.—F.E.W.

RENOUX, G. & MAHAFFEY, L. W. (1955). On the probable existence of new *Brucella* antigens, suggesting a new diagram for representing the distribution of these antigens.—FAO/WHO Joint Advisory Panel on *Brucellosis* (WHO/*Bruc.*/108.) pp. 5. [Authors' summary copied verbatim.] 1597

The ovine strains isolated in New Zealand by BUDDLE [V.B. 23, 3293 and preceding abst.] belong to the *Brucella* species of which they have the biochemical characteristics. They have a specific antigen ("Z" antigen) which also occurs in smaller quantities in *Br. abortus* in the rough phase and sometimes in *Br. melitensis* "R". In *Brucella* in the rough phase, there exists at least one "r" antigen. The serological behaviour of the various varieties of *Brucella* can be shown by a concentric representation of the *Brucella* antigens in the micro-organism.

CAMERON, H. S. & MEYER, M. E. (1954). The differential effect of basic fuchsin and thionin on *d*-alanine utilization by the genus *Brucella*.—*Amer. J. vet. Res.* 15, 472-474. [Authors' summary modified.] 1598

The authors studied the effect of basic fuchsin and thionin on the oxidation of *d*-alanine by the three species of *brucella*. Data obtained from resting cell respiration studies indicated that one of the mechanisms responsible for the differential bacteriostatic action of these dyes lay in their effect on different enzyme systems.

LAGRANGE, W. E., MCCAHOON, J. V. & LITTLE, R. B. (1953). *Leptospirosis in farm animals*.—*Proc. 89th Ann. Meet. Amer. vet. med. Ass. Atlantic City. June 23-26th 1952.* pp. 90-94. 1599

An account of the clinical features of *Leptospira* infection in cattle in Pennsylvania and New Jersey. The authors discussed briefly the literature on leptospirosis in horses, cattle and pigs.—R.M.

STOENNER, H. G. (1954). Application of the capillary tube test and a newly developed plate test to the serodiagnosis of bovine leptospirosis. — *Amer. J. vet. Res.* 15, 434-439. 1600

S. has previously described the technique of a capillary tube agglutination test for leptospira [V.B. 23, 2785]. In the present paper he compared this test with a macroscopic plate-agglutination test, using antigens prepared from *L. pomona* and 7,000 sera from cattle from infected and non-infected herds. The best results were obtained by using a combination of the two tests; sera were first classified into leptospira-positive and leptospira-negative by means of the plate-agglutination test; the titre of positive sera was then determined by the capillary tube test.—R.M.

MATHEY, W. J. & SIDDLE, P. J. (1955). *Spirochetosis in pheasants*.—*J. Amer. vet. med. Ass.* 126, 123-126. [Abst. from authors' summary.] 1601

An account of an outbreak of spirochaetosis in Mongolian pheasants on a California game farm. The lesions differed from those of spirochaetosis of fowls and turkeys. The infection was transmitted to chicks and ducklings by intramuscular injection of blood, and to healthy ducklings by contact. It was also transmitted to a chicken by the intravenous injection of vent fluid. The authors suggested that transmission of spirochaetosis, at least in the U.S.A., may be brought about by contaminated droppings as well as by arthropod vectors.

SMITH, L. D. & MATSUOKA, T. (1954). A comparison of *Clostridium perfringens* epsilon toxin-toxoid and prototoxin-toxoid in the immunization of young lambs. — *Amer. J. vet. Res.* 15, 361-363. 1602

Lambs aged 15 days were inoculated with toxoids prepared from the ϵ toxin of Type D *Cl. welchii*. The immunity obtained, as shown by immediate response and by the response to a second s/c injection 18 weeks after the first, indicated that culture treated with trypsin prior to formolization and precipitation with alum gave better results than toxoid similarly prepared but not treated with trypsin. A satisfactory level of immunity was also obtained in lambs aged 5-6 months.—R.M.

FIELD, H. I. & GIBSON, E. A. (1955). *Studies on piglet mortality. II. Clostridium welchii infection*. — *Vet. Rec.* 67, 31-35. [Authors' summary modified.] 1603

Heavy mortality in piglets during the first 72 hours of life was found to be due to infection with *Cl. welchii* Type C. The organism was isolated in culture from the intestines of affected piglets, and was also demonstrable in

the faeces and on the skin of one of the sows. The authors suggested that sows may become carriers of *Cl. welchii* when kept on pasture during pregnancy and that the piglets ingest the organism when sucking. Death follows bacterial multiplication and toxin production in the small intestine, mainly the jejunum. The results of a small field trial indicated that the injection of piglets shortly after birth with a serum containing *Cl. welchii* β -antitoxin is a useful prophylactic measure.

BENNETT, P. C. (1954). **Enterotoxemia of swine.**—*Iowa Vet.* **25**, No. 6, pp. 9-13. 1604
A brief general account.—A. SEAMAN.

JACQUET, J. (1954). Sur le botulisme équin et notamment le botulisme expérimental provoqué à l'aide de la toxine. [Botulism in horses and experimental reproduction of the disease by means of toxin.]—*Bull. Off. int. Epiz.* **42**, May, pp. 473-481. 1605

The m.l.d. of *Cl. botulinum* toxin for oral and subcutaneous administration was assessed. The peracute and acute forms of botulism were produced in horses and the clinical manifestations and P.M. findings were recorded.

Marked hypoglycaemia was found in cases in which blood examination was possible. The main features of the disease were the rapidity of invasion of the blood stream and the neurotropic character of the toxin. The chief clinical symptoms were associated with the respiratory and the central nervous systems and jaundice was always present.

Antitoxic serum was of value as a prophylactic and had curative properties in the very early stages of infection.

—T. E. GATT RUTTER.

ANON. (1954). **A report on a serious outbreak of botulism.**—*Amer. Fur Breeder.* **27**, 10-11 & 86-89. 1606

Four thousand five hundred mink on 6 fur farms died from botulism, probably derived from a single shipload of contaminated whale meat. The administration of antitoxin within 24 hours often failed to affect the course of the illness, but force-feeding saved many weak animals.—A. SEAMAN.

DINTER, Z. & KULL, K.-E. (1954). Über einen Ausbruch des Botulismus bei Fasanenküken. [Botulism in pheasant chicks.]—*Nord. VetMed.* **6**, 866-872. [In German. English and Swedish summaries. Abst. from English summary.] 1607

In June 1954 an outbreak of type C botulism occurred on a pheasant breeding farm in

South Sweden. Of 328 chicks 218 succumbed. The toxin-containing food constituent proved to be larvae of flies (*Calliphora* and *Lucilia*) which had been bred in carcasses of wild rabbits.

The authors demonstrated that although the titre of botulinus toxin, was relatively low in the larvae before they were ingested, it increased considerably in the crops of the birds. This indicates that the larvae contained not only toxin, but also organisms and/or spores of *Cl. botulinum* for which the crops had acted as an incubator.

POWER, J. H. (1954). **The intravaginal inoculation of guinea-pigs as a method of demonstrating *Vibrio fetus* in the semen of infected bulls.**—*Irish vet. J.* **8**, 238-242. 1608

V. fetus was recovered from the semen of an infected Ayrshire bull, using a slight modification of the g. pig inoculation test described by Adler [*V.B.* **24**, 665]. This confirmed a positive diagnosis made in the herd using the mucus agglutination test.

P. discussed the possible use of the g. pig inoculation test in conjunction with the test-mating of heifers with suspect bulls.

—F.E.W.

MOHAN, R. N. (1954). **Possibility of *Vibrio fetus* infection existing in cattle in India.**—*Indian J. vet. Sci.* **24**, 173-175. [Author's summary modified.] 1609

Vaginal mucus of 89 cows and buffaloes, including a few sexually mature female calves, belonging to three different herds which experienced a varying degree of breeding troubles, was tested for *V. fetus* agglutinins.

Positive agglutination reactions occurred in 20 cows, 9 sexually mature female calves and one buffalo; but, except in the case of the buffalo, the agglutinations were weak and rather ill-defined.

Of some 20 specimens of vaginal mucus as well as blood serum forwarded to Weybridge, England, a positive agglutination reaction was yielded by only one, from a buffalo.

SCHNEIDER, D. W. & MORSE, E. V. (1955). **The growth and viability of *Vibrio fetus* and related vibrios in media containing ox bile.**—*Cornell Vet.* **45**, 84-89. [Authors' summary modified.] 1610

The strains of *V. fetus* and other unidentified strains examined were tolerant of ox bile, and the majority could be cultivated in media containing 10% bile. The organisms were unable to withstand storage temperatures near the freezing point. Stock cultures are best main-

tained at room temp. (21°C.), with transfer to fresh medium every 4 weeks.

Strains isolated from bovine vaginal mucus or from bull semen were more deleteriously affected by bile media concentrations and by storage at low temperatures than were those strains cultured from aborted fetuses from cattle or sheep.

The incorporation of bile in media has provided a basis for the development of a selective medium for *V. fetus*. It has been possible to isolate the organism from experimental infections in g. pigs and hamsters using a 10% bile, semi-solid medium.

MARSH, H. & TUNNICLIFF, E. A. (1955). **The diagnostic significance of the agglutination reaction for vibriosis in sheep.** — *J. Amer. vet. med. Ass.* **126**, 100-103. [Authors' summary modified.] **1611**

Agglutination tests on a large number of sheep which had been infected either naturally or artificially with *V. fetus* revealed that agglutinins in varying amounts, often in low titres, are usually present in the blood serum in the acute stage of the infection; that, in most cases, they decrease rather rapidly after expulsion of the foetus; and that 95% of aborting ewes are negative to the agglutination test before the next breeding season. The authors concluded that the agglutination test has only a limited application in the practical control of *V. fetus* infection of sheep.

MARSH, H., FIREHAMMER, B. D. & SCRIVNER, L. H. (1954). **The negative role of the ewe in the transmission of vibriosis of sheep.** — *Amer. J. vet. Res.* **15**, 352-355. [Authors' summary modified.] **1612**

Fifty yearling ewes from a flock which was known to be free from *V. fetus* infection for 9 years were bred, wintered, and lambd with 42 ewes, all of which had aborted as the result of the infection during the previous season. None of the exposed yearlings became infected, and *V. fetus* could not be isolated from the vagina or uterus of the previously infected ewes. In another experiment, 10 ewes from a flock presumably free from infection were bred, wintered, and lambd with 24 ewes from an infected flock which had lambd normally in the previous season. There was no evidence of the presence of *V. fetus* in vaginal or uterine swabs from any of these ewes.

LIENERT, E., NORDBERG, B. K. & THORSELL, W. (1954). Über die Enzym-Aktivität von Autolysaten aus Mastitisserregern auf Elemente des Bindegewebes und über sich daran

anschliessende Hemmungsversuche. [Studies on the enzymic activity of mastitic autolysates upon connective tissue elements — together with some appertaining inhibitory experiments.] — *Nord. VetMed.* **6**, 785-790. [In German. English and Swedish summaries. Abst. from English summary.] **1613**

The authors examined the enzymic activity of autolysates of various organisms causing mastitis (*Staphylococcus* var. *aureus*, *Pseudomonas pyocyanea* and *Bacterium coli*) upon connective tissue elements (collagen, hyaluronic acid and chondroitin sulphuric acid). They confirmed the ability of *Staph. pyogenes* var. *aureus* to split hyaluronic acid, as previously demonstrated by Chain & Duthie (1940). *Ps. pyocyanea* had a weak collagenase activity.

Extract of Male Fern (Filix Mas) which contains polyphloroglucin derivative, had a marked inhibitory effect on hyaluronidase from *Staph. pyogenes* var. *aureus*.

WILLIGAN, D. A. & BEAMER, P. D. (1955). **Isolation of a transmissible agent from pericarditis of swine.** — *J. Amer. vet. med. Ass.* **126**, 118-122. [Abst. from authors' summary.] **1614**

The authors isolated in chick embryos an infective agent from a field case of serofibrinous pericarditis of swine by inoculation *via* the yolk sac.

Growth of the micro-organism did not appear to be supported by common bacteriological media, nor by agar as used for the cultivation of pleuropneumonia-like organisms.

Lesions of pericarditis, pleuritis, peritonitis, and arthritis were reproduced in pigs by i/v and by i/p inoculation of infective yolk-sac contents.

The agent stained deeply with Giemsa stain. Morphologically, it appeared to be coccoid to coccobacillary in shape and measured about 0.5 μ or less in diam. It was Gram-negative.

LOWBURY, E. J. L., CROCKETT, D. J. & JACKSON, D. M. (1954). **Bacteriology of burns treated by exposure.** — *Lancet.* **267**, 1151-1153. [Authors' summary modified.] **1615**

In human patients, burns treated by exposure yielded heavy growths of *Staph. aureus*, *Str. pyogenes*, *Ps. pyocyanea*, and other pathogens from the inner surface of scabs, while the dry outer surface yielded few bacteria on culture.

Exposed burns of the face had a higher incidence of acquired *Str. pyogenes* than did

burns of other regions; the lowest incidence of *Str. pyogenes* and *Ps. pyocyanea* was found on burns of hands and feet which could be adequately covered and were dressed with penicillin cream in an air-conditioned dressing-room.

Burns of the trunk treated by exposure had a higher incidence of *Str. pyogenes* and *Staph. aureus* than similar burns treated by the closed method.

Ps. pyocyanea and coliform bacilli were somewhat commoner in closed than in exposed burns, presumably because these bacteria are more readily killed by evaporation of their suspending medium than are Gram-positive cocci.

AINSWORTH, G. C. & AUSTWICK, P. K. C. (1955). A survey of animal mycoses in Britain: general aspects.—*Vet. Rec.* **67**, 88-97. [Authors' summary slightly modified.] 1616

During a two-year survey of fungi associated with disorders of farm animals in Britain, more than 1,200 isolates of fungi were identified from nearly 700 cases of mycotic or suspected mycotic infection. These isolates were classified in 125 species of which approx. 25 are considered to be usually, or on occasion, pathogenic and to have been causally involved in approx. 300 cases.

The more familiar mycoses recorded during the survey were avian aspergillosis (caused by *Aspergillus fumigatus* and occasionally by *A. nidulans* and *A. nigeri*); ringworm (in cattle, horses, cats and dogs); and avian moniliasis. Aspergillosis was frequently noted in poultry and in birds in captivity and also in a few wild birds. All cases of cattle ringworm confirmed by laboratory examination were caused by *Trichophyton discoides*. One third of the cases of avian moniliasis occurred among turkey poults during July, 1953. Case histories suggest that there is still much to learn concerning the epidemiology and control of these conditions.

No new major mycosis was discovered, neither were any of the important mycoses of domesticated animals endemic in other parts of the world recorded for Britain. A hitherto undescribed disease of g. pigs caused by *Absidia corymbifera* and *A. ramosa* was investigated and the finding of haplosporangiosis (*Haplosporangium parvum*) in moles constituted both a new host record for this prevalent mycosis of North America and a new European record for the condition.

A series of cases of otherwise unexplained bovine abortion associated with fungi supported

the view that fungi are not infrequently the cause of abortion in cattle and that "mycotic abortion" merits the status of a distinct clinical condition.

Most of the mastitis cases from which fungi were isolated could not be attributed to any other cause. The condition frequently occurred following antibiotic therapy.

Fungi were also recorded from the respiratory, digestive, excretory and nervous systems of animals; the authors discussed the significance of the isolates in relation to the fungus flora of mouldy hay and fodder, which is considered as a potential source of pathogens.

MENGES, R. W., FURCOLOW, M. L. & HABERMANN, R. T. (1954). An outbreak of histoplasmosis involving animals and man.—*Amer. J. vet. Res.* **15**, 520-524. 1617

An account of an outbreak in the U.S.A. of *H. capsulatum* infection involving 5 human beings, 5 dogs, 4 cats, and 3 fowls, all on one farm. The fungus was isolated from the 5 dogs and one of the cats. Two of the fowls reacted to the histoplasmin test. Out of 161 farm animals within a 2 mile radius of the affected farm, 9 reacted to the histoplasmin test. The fungus was present in the manure in a hen house.—R.M.

CHATTAWAY, F. W. & BARLOW, A. J. E. (1954). The fluorescent materials produced in vivo by certain dermatophytes.—*J. gen. Microbiol.* **11**, 506-511. [Authors' summary modified.] 1618

The authors extracted, by means of dilute ammonia, fluorescent materials present in human and cat hair as a result of infection with *Microsporum canis*, *M. audouini* and *Trichophyton schoenleinii*. Paper chromatography and electrophoretic studies revealed that the principal fluorescent material was common to all these infections, though further fluorescent substances were present in the extract from hair infected with *T. schoenleinii*. They examined the chemical properties and absorption spectra of the extracts.

BROOKSBANK, N. H. & AUSTWICK, P. K. C. (1955). Susceptibility of inbred and outbred chicks to aspergillosis.—*Brit. vet. J.* **111**, 65-67. 1619

Heavy losses occurring during alternate weeks in chicks in a hatchery where inbred and crossbred chicks were hatched in alternate weeks were found on P.M. and cultural examinations to be due to *Aspergillus fumigatus* infection. The losses appeared to be related to differences in susceptibility between

the pure and hybrid strains and also indicated differences in susceptibility between several pure-bred lines.—F.E.W.

ECHENIQUE, L. & TEDESCO, L. F. (1951). *Micosis bovina. [Mycosis in cattle.]* — *Rev. Med. vet., Montevideo*, **25**, 1079-1090. 1620

An account of work on a disease which has been prevalent in cattle in Uruguay since early in 1948. It resembles a disease claimed by Echenique to be a mycosis in sheep [*V.B.* **21**, 3503]. It is characterized by sudden onset and is generally fatal in 15-20 days or earlier. The lesions, besides a severe dermatomycosis, include congestion of the gastro-intestinal tract with suffusion with blood; frequently there is pulmonary oedema; the liver has a "boiled" appearance; the spleen usually normal in size, has the consistency of smooth clay; the kidneys are congested and often greenish and pulpy; there is congestion of the meninges; sometimes there is a subcutaneous oedema, bright yellow or greenish in colour. The authors stated that they isolated a fungus (which they consider to be a species of *Microsporum*) from the bone marrow of cattle that had died from the disease and from the blood of severely affected animals. They described control measures involving the use of a vaccine prepared from the organism.—F.E.W.

PRIESTLEY, F. W. & MIHMEID, M. A. (1954). *Unsuccessful attempts to set up pleuro-pneumonia lung lesions by artificial methods.* — *J. R. Army vet. Cps.* **25**, 115-116. [Authors' summary modified.] 1621

An account of unsuccessful attempts to set up, in cattle, lung lesions typical of bovine contagious pleuro-pneumonia by inhalation of culture and by exposure *via* the conjunctiva.

CORDY, D. R., ADLER, H. E. & YAMAMOTO, R. (1955). *A pathogenic pleuropneumonia-like organism from goats.*—*Cornell Vet.* **45**, 50-68. [Authors' summary modified.] 1622

The authors reported an outbreak of a highly fatal disease characterized by septicaemia and arthritis and caused by a pleuropneumonia-like organism (PPLO) in a herd of dairy goats. Clinically the outbreak was typical of neither contagious agalactia of sheep and goats nor caprine contagious pleuro-pneumonia. Experimentally infected goats, sheep, and a pig developed symptoms and lesions similar to those of the field cases. Mice, g. pigs, and a calf were resistant to infection.

Culturally the organism resembled that of caprine contagious pleuro-pneumonia in almost

every respect. Agglutination tests on the sera of animals in the herd revealed a high percentage of reactors to a homologous PPLO antigen. The contagious agalactia serum failed to agglutinate this strain at dilutions tested. Caprine contagious pleuro-pneumonia serum agglutinated the antigen at the 1:10 level as compared to a titre of 1:640 in the serum of a field case.

ADLER, H. E., YAMAMOTO, R. & BANKOWSKI, R. A. (1954). *A preliminary report of various mediums for isolation of pleuropneumonia-like organisms from exudates of birds with chronic respiratory disease.*—*Amer. J. vet. Res.* **15**, 463-465. [Authors' summary modified.] 1623

The authors compared media employed for the isolation of pleuropneumonia-like organisms, using material from the nasal exudate of fowls and turkeys infected with "chronic respiratory disease". A medium composed of a 10% blood slope overlaid with a 20% horse serum broth appeared to be the most satisfactory for the isolation of these organisms.

WHITE-STEVENS, R. & ZEIBEL, H. G. (1954). *The effect of chlortetracycline (aureomycin) on the growth efficiency of broilers in the presence of chronic respiratory disease.* — *Poult. Sci.* **33**, 1164-1174. [Abst. from authors' summary.] 1624

Chlortetracycline effectively sustained growth efficiency of "broiler" chickens under commercial field conditions when fed continuously (prophylactically) at the rate of 50-100 g./ton of feed in the presence of subclinical infection of "chronic respiratory disease" of fowls; but when a severe clinical outbreak of the disease occurred a dosage of about 400 g./ton of feed or 250 mg./gal. of drinking water for a period of 14 days was necessary to restore growth efficiency, after which the dosage could be reduced to 50-100 g./ton of ration to sustain growth efficiency until the chickens were marketed.

JOHNSON, E. P. (1954). *The specificity of lymphofollicular lesions in the diagnosis of chronic respiratory disease.*—*Cornell Vet.* **44**, 230-239. [Author's summary modified.] 1625

J. stated that chronic respiratory disease of fowls and turkeys is characterized by the formation of histopathological lesions in the air sacs, lungs, and trachea which appear to have diagnostic value. They are primarily in the form of lymphoid foci invading the areas

surrounding the lymphofollicular areas. Adjacent to these, especially when the exudate which is present becomes caseous, are numerous granulocytes and occasional giant cells.

These lesions are sufficiently established 7 days after artificial infection with pleuropneumonia-like organisms to establish a diagnosis of chronic respiratory disease. In the absence of a proven specific serological test, this appears to be the most acceptable method for diagnosis at the present time.

PESHKOV, M. A. (1954). [**The so-called L forms of bacteria.**—*Microbiology, Moscow*. **23**, 607-628. **1626**

This is a detailed review on pleuropneumonia-like and L-organisms, beginning with Gamalea's description in 1894 of Large Bodies, due to the influence of lithium salts. Every aspect is covered and a good deal of valuable technical information is given. It is probably the most balanced account of the subject published so far.—A. MAYR-HARTING.

HARTLEY, W. J., JEBSON, J. L. & MCFARLANE, D. (1954). **New Zealand type II abortion in ewes.**—*Aust. vet. J.* **30**, 216-218. **1627**

Workers at Wallaceville, New Zealand, had previously [*V.B.* **23**, 914 & 3293] described abortion in sheep due to a brucella mutant (N.Z. Type I abortion). In this paper the authors described a second and distinct condition (designated N.Z. Type II abortion) occurring on farms in the sheep breeding districts of New Zealand. The disease is characterized by sporadic abortions beginning from 4 to 6 weeks before lambing time and numerous abortions at the onset of lambing. Losses from abortions and/or stillbirths are usually from 15 to 20% but on affected farms may reach 50%.

Characteristic lesions consisting of numerous white or yellow foci of necrosis 1-3 mm. in diam. were present in the foetal cotyledons and these cotyledonary lesions were distinct from those seen in infection caused by the brucella mutant and can be easily differentiated from calcified foetal villi.

Histological examination regularly revealed small numbers of intra- and extra-cellular toxoplasm-like bodies in affected cotyledons.

Efforts to transmit the condition to pregnant ewes had so far given inconclusive results.—K. G. JOHNSTON.

ULENDEEV, A. I. (1954). [**The quantity of acidophilic bacteria in the intestines of horses.**—*Microbiology, Moscow*. **23**, 474-476. [In Russian.] **1628**

Reports in the literature about acidophilic bacteria in the intestine of adult horses are contradictory. The author found acidophilic bacteria in every specimen examined and determined their quantity by making dilutions of faeces in milk and plating measured quantities on acidified glucose agar. Fourteen horses, aged 2-23 years, had, irrespective of age, state of health and state of nourishment, 700,000-8 millions of lactobacilli per g. faeces.

—A. MAYR-HARTING.

FROBISHER, M., JR. [Professor, Department of Bacteriology, University of Georgia.] (1953). **Fundamentals of microbiology.** pp. xxi + 633. Philadelphia (& London): W. B. Saunders Co. 5th Edit. 30s. **1629**

This new and revised edition is one third shorter than the fourth edition and has even lost its original preface, which is a pity because a preface is an essential part of a book. The author has written for beginners and introduces them to the whole subject of microbiology in five main sections: (i) History of the subject and brief description of the main classes of microorganisms; (ii) morphology, classification and metabolism; (iii) immunology; (iv) detailed consideration of the bacteria (Schizomycetes); and (v) microbiology of water, soil, food, air, milk and industrial processes.

Each chapter has a useful list of references, the text is clear and interesting to read, and there are many good illustrations. The occasional references to animal diseases and products are not always accurate, as when it is stated (p. 534) that raw milk is "said to contain" a larger amount of vitamins than pasteurized milk or that *S. pullorum* causes outbreaks of disease in man (p. 543). But these are only small criticisms of what is a very useful book and one that provides a sound introduction to a wide field of knowledge at a very moderate price.—E. G. WHITE.

See also absts. 1713 (nutritional value of killed *B. coli*); 1752 (mixed infection with brucellosis and Q fever); 1829 (differentiation of growing and non-growing bacteria by staining); 1835 (report, Northern Ireland); 1836 (report, Western Australia); 1837 (report, Union of South Africa); 1838 (report, Colony of Fiji); 1839 (report, Uganda Protectorate); 1841 (textbook, microbiology); 1842 (book, Enterobacteriaceae).

DISEASES CAUSED BY PROTOZOAN PARASITES

NOBLE, G. A. (1955). *Entamoeba bubalus* n. sp., from carabao.—*J. Prot.* 2, 19-20. [Author's summary modified.] 1630

Twelve buffaloes in the Philippines were found to be lightly infected with intestinal amoebae. Trophic forms (12 μ in diam.) of the parasite possessed a definite ectoplasm and a homogeneous endoplasm. They were found only in stained preparations. The nucleus was similar to that of the cyst. All unconcentrated faecal smears examined contained at least a few cysts (8 μ in diam.). In these forms the cytoplasm usually contained a large vacuole and one or more irregular chromatoidal bodies. The nucleus (2.6 μ in diam.) had a pronounced, deeply staining, uniform peripheral ring and a large irregular endosome. There was no per-endosomal ring. N. proposed the designation *Ent. bubalus*, n.sp.

HILL, D. H. (1955). *Trypanosoma brucei* in the cat.—*Brit. vet. J.* 111, 77-79. [Author's summary modified.] 1631

An account of natural infection of a cat with *T. brucei*. Acute inflammation of the eyes, followed by blindness, inappetence and listlessness, were the predominant clinical symptoms. Trypanosomes were present in large numbers in the peripheral blood during the febrile stages. Anttrypanocide methyl-sulphate therapy, although markedly successful in clearing up the eye condition, failed to check relapses. No other trypanocidal drugs were used. The cat was destroyed six months after the initial onset of symptoms.

JOYNER, L. P. (1954). The elimination of *Trichomonas foetus* from infected semen by storage in the presence of glycerol. — *Vet. Rec.* 66, 727-730. [Author's summary slightly modified.] 1632

Tr. foetus can be eliminated from infected semen by storing overnight at +5°C. in 20% glycerol or preferably by freezing to -79°C. in the presence of 10% glycerol.

LUND, E. E. (1954). Estimating relative pollution of the environment with oocysts of *Eimeria stiedae*.—*J. Parasit.* 40, 663-667. [Author's summary modified.] 1633

A single dose of only 10 oocysts of *E. stiedae* in rabbits 8 weeks of age produced no hypertrophy of the liver, but appreciably larger doses produced increases in the weight of the liver that varied directly and more or less proportionately to the increase in the size of the dose. These increases were most constant after

the 22nd day of infection, and before the 34th day.

When clean rabbits were turned on to grass plots heavily populated with affected rabbits, a small proportion of the young animals acquired infections equal to those caused by the simultaneous ingestion of over 100,000 oocysts. The average infection resembled those produced by the ingestion of about 1000 oocysts, and a few rabbits escaped infection entirely, for about 8 weeks.

Hutch-raised rabbits that ran about less when released in the warrens than those reared exclusively on the soil, and that grazed less, acquired infections of only one tenth the average intensity of those of the rabbits permanently occupying the same warren.

Warrens that remained unoccupied for 6-8 months, including the dry summer months, were only 2% as infective as when occupied continuously.

Close confinement of young rabbits in hutches with self-cleaning floors of metal fabric permitted some spread of the disease, but the hazard increased by 20 times when half the floor was covered with wood or sacking.

DEOM, J. & MORTELMANS, J. (1954). Thérapeutique comparée de la coccidiose intestinale du lapin domestique. [Treatment of intestinal coccidiosis in rabbits.] — *Bull. agric. Congo belge*. 45, 431-436. [In French. English and Flemish summaries. Abst. from English summary.] 1634

Nitrofurazone, nivaquine [(diethylamino-4-methyl-1)-butyl-amino-4-chloro-7-quinoleine sulphate] and sulphadimidine sodium were given to rabbits infected with *Eimeria irresidua* and *E. perforans*. All were equally good, clearing the infection after 5 days' treatment.

—JAS. G. O'SULLIVAN.

NOSIK, A. F. & SIMONENKO, N. M. (1954). [Treatment of coccidiosis in animals and birds.] — *Veterinariya, Moscow*. 31, No. 5, pp. 39-41. [In Russian.] 1635

An account of combined therapy with the sulphonamides "norsulphasol" and "disulphane", claimed to have been 100% effective in cattle, rabbits and fowls infected with coccidia. Cattle were given twice daily 0.015-0.02 g./kg. body wt. of each preparation on 3-4 consecutive days. In rabbits infected with *E. perforans*, *E. magna* and other species, the most effective daily dosages were: disulphane 0.2-0.3 g./kg. body wt. mixed with the mash, and nor-

sulphasol, 0.3-0.4 g./kg. body wt. as a 0.5-1% soln. in the drinking water for 4-5 days. Chickens, 4-6 weeks old, were given daily for 3-5 days 0.015-0.03 g. each of disulphane mixed in their food and 0.3-0.5% aqueous soln. of norsulphasol (equal to 0.03-0.05 g.). This was, as a rule, sufficient for a cure. For weak chickens the treatment was repeated after 15 days. The dosage for adult fowls was 0.3 g. of each preparation for 3 days. Doses 5-6 times the therapeutic dose were found to be harmless.—F. A. ABBEY.

LEVINE, L. & HERRICK, C. A. (1954). The effects of the protozoan parasite *Eimeria tenella* on the ability of the chicken to do muscular work when its muscles are stimulated directly and indirectly.—*J. Parasit.* 40, 425-531. [Authors' summary modified.] 1636

When the gastrocnemius muscles of chickens infected with caecal coccidiosis were stimulated directly through electrodes inserted into the muscle or indirectly by electric impulses applied to the bared sciatic nerve they did only 58% of the work done by those of healthy controls. Early and pronounced fatigue was characteristic of the muscles of the infected chickens.

POLS, J. W. (1954). Preliminary notes on the behaviour of *Globidium besnoiti* Marotel, 1912, in the rabbit. — *J. S. Afr. vet. med. Ass.* 25, No. 3, pp. 45-48. [Author's summary modified.] 1637

Passaging *Globidium besnoiti* in rabbits did not modify the incubation period, but the later passages had in general a more protracted course. P. observed symptoms varying from a febrile reaction only to severe swelling of the head and body: in males scrotal swelling was often the first symptom observed. There was no definite correlation between the number of subinoculations and the severity of symptoms. He gave a description of the parasite in smears from blood, lung and testis.

He considered that simple binary fission is the usual mode of multiplication, though multinucleate aberrant forms occur. The globidial cysts are formed in the cutis vera, subcutis and connective tissue of the testis by invasion of histiocytes by trophozoites. These multiply by binary fission in intracellular vacuoles to form one or more groups of so-called "spores" each enclosed in its own inner membrane. These are surrounded by an intermediate membrane representing the cytoplasmic and multinucleate remnants of the host cell. The outer wall or capsule arises through hyalinization of concentrically layered collagenous fibres.

SIMPSON, C. F. & SWARTHOUT, E. W. (1954). *Haemoproteus columbae* infection in Florida pigeons.—*Vet. Med.* 49, 491 & 494. [Abst. from authors' summary.] 1638

Ten pigeons trapped at random in a Florida city park were found to be parasitized with *Haemoproteus columbae*. No symptoms were observed in these birds.

BOGORODITSKI, A. V. (1953). [Differential biology and clinical processes of *Babesia bigemina* and *Françaiella* (B.) *colchica* infections in cattle in Uzbekistan.] — *Veterinariya, Moscow*. 30, No. 12, pp. 23-24. [In Russian.] 1639

B. stated that, apart from differences in morphology *B. bigemina* and *B. colchica* can be sharply differentiated biologically by essential differences in the course of the infections they produce. *B. bigemina* develops much more quickly and in larger numbers than *B. colchica*. The latter organism is not found in peripheral blood smears from carriers while the former is easily demonstrable.

Relapses occur with *B. bigemina*, but none were noted with *B. colchica*. Another difference is that *B. bigemina* organisms appear to be less resistant to physical, chemical and biological factors. Only flavacridine [? acriflavine], 2-3 injections, appears to be effective against *B. colchica* while *B. bigemina* succumbs to one such injection and also to one injection of either trypanblue, "piroplasmin" (acaprin), "haemospardin" or "novoplasmin". Cattle that recovered from *B. colchica* infection had a more durable immunity than those that recovered from infection with *B. bigemina*.—F. A. ABBEY.

BOGORODITSKI, A. V. (1954). [Types of *Theileria annulata* and *T. mutans*.] — *Veterinariya, Moscow*. 31, No. 3, pp. 34-37. [In Russian.] 1640

To solve the speculations whether one or both types of *Theileria* exist, B. studied the morphology of the parasites and the course of the infection. He suggested that the two types have an identical origin, but that differing natural conditions, chiefly climate, cause further development of the organism in some cases. In southern regions of the U.S.S.R. *Th. annulata* only is found while further north *Th. mutans* also appears.—F. A. ABBEY.

RAMANUJACHARI, G. & ALWAR, V. S. (1954). Observations on theileriasis among sheep in Madras.—*Madras Vet. Coll. Ann.* 12, 23-25. [Abst. from authors' summary.] 1641

The authors recorded the occurrence of

Theileria in sheep in the State of Madras. They described the clinical symptoms, P.M. findings and various other features of the disease. They found little reference in the literature to theileria infection in sheep and goats in India. They discussed the specific identity of *Theileria* in sheep.

WEINMAN, D. & CHANDLER, A. H. (1954). **Toxoplasmosis in swine and rodents. Reciprocal oral infection and potential human hazard.**—*Proc. Soc. exp. Biol., N.Y.* **87**, 211-216. [Abst. from authors' summary.] **1642**

The authors reported that *Toxoplasma* infection is transmitted between pigs and rodents when either animal is fed infected tissue from the other, and also that pigs can be infected when fed offal from affected pig carcasses. They described feeding cycles reminiscent of those known in trichinosis and discussed the possible dangers of *Toxoplasma* infection from undercooked pork.

ERICHSEN, S., HARBOE, A. & LINDBERG, W. (1954). **An attempt to produce manifest toxoplasmosis in vitamin A deficient rats.**—*Nord. VetMed.* **6**, 791-794. [In English.]

See also absts. 1839 (report, Uganda Protectorate); 1840 (report, Zanzibar Protectorate); 1841 (textbook, microbiology).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

KINDYAKOV, V. I., BAYADINOV, A. N., FILIPOVICH, S. M. & NIKONOVA, O. S. (1952). **[Mutability of the foot and mouth disease virus.]**—*Veterinariya, Moscow.* **29**, No. 8, pp. 21-27. [In Russian.] **1645**

The authors studied the epidemiology of F. & M. disease for 3 years on a large farm into which no cattle were imported during that time and the disease was not known to be present within several hundred kilometres. Apart from the 3 basic types O, A and C, they identified 45 strains and stated that the types kept changing in the cattle while remaining unchanged in g. pig passages. They postulated that the virus possesses a number of specific antigenic albumins, one of which becomes predominant under the influence of conditions that suit it alone. This, they suggested, would explain the mutations in type and strain. They suggested that the virus does not necessarily die under unfavourable conditions, but remains dormant until such time as conditions become suitable to one of the albumin types, when this becomes virulent and determines the particular type of infection which breaks out.

—F. A. ABBEY.

German and Norwegian summaries. English summary modified.] **1643**

Inoculation with toxoplasms produced neither clinical symptoms nor lesions indicative of toxoplasmosis within an observation period of 4 weeks in a group of 5 rats depleted of vitamin A and given daily supplements of 2 I.U. of β -carotene. The group was compared with a corresponding group of rats given 25 I.U. of vitamin A. Uninoculated groups of rats in the same nutritional states served as controls.

HARBOE, A. & ERICHSEN, S. (1954). **Toxoplasmosis in chickens. III. Attempts to provoke a systemic disease in chickens by infection with a chicken strain and a human strain of toxoplasma.**—*Acta path. microbiol. scand.* **35**, 495-502. [Authors' summary modified.] **1644**

The authors inoculated fowls either with a strain of *Toxoplasma* isolated from fowls with spontaneous toxoplasmosis, or with a human strain. Some day-old chicks succumbed following subcutaneous inoculation. In older fowls no certain reaction could be attributed to the toxoplasms, apart from local inflammation at the sites of inoculation.

ANDERSEN, S. (1954). **Mund- og klovesyge-vaccinens anvendelse og vaerdi under epizootien 1951/52. [The use of vaccine in the foot and mouth disease epizootic of 1951-52 in Denmark.]**—*Nord. VetMed.* **6**, 231-254. [In Danish. English and German summaries.] **1646**

Since August 1951, F. & M. disease variant A₅ had caused 26,500 outbreaks in Denmark, whilst only 500 were recognized as due to type C. A bivalent vaccine O+A was used at first and appeared to give a good immunity also against variant A₅, though only for 4-5 weeks. The protection conferred by the monovalent vaccine A₅ (when it could be prepared) was naturally higher and outbreaks due to variant A₅ occurred on only 8.6% of the farms on which it had been used.

Vaccination with the monovalent type C vaccine was even more successful: the infection appeared only in 1.1% of the farms on which it had been used.—I. MARTINI.

VAN WASSENHOVE, A. (1955). **Pseudolyssa in België. [Aujeszky's disease in Belgium.]**—*Vlaam. diergeneesk. Tijdschr.* **24**, 35-38.

[English, French and German summaries.] 1647

Two calves and three heifers in a herd of 10 developed Aujeszky's disease. The presence of the virus in the brains was demonstrable by animal inoculation. The disease had not previously been reported in Belgium.

—C. A. VAN DORSSEN.

GAVRICHENKOV, A. I. (1953). [Aujeszky's disease in hens.] — *Veterinariya, Moscow*: 30, No. 8, pp. 29-30. [In Russian.] 1648

Hens could be infected with the virus of Aujeszky's disease by intracerebral injection, but not by any other route. The incubation time was 6-12 days. Suspensions of spleen and brain of the sick birds, injected intramuscularly into rabbits, caused the typical disease. The virus could be passaged once from hen to hen, but lost its virulence after this.

—A. MAYR-HARTING.

ADEMOLLO, A. & BOLDRINI, G. (1954). La progression et la prophylaxie de la rage en Italie. [The control of rabies in Italy.] — *Bull. Off. int. Epiz.* 42, May, pp. 94-114. [English summary.] 1649

Control measures over the period 1946-53 were divided into two 4-year periods. Normal classical methods of eradication were reinforced by compulsory vaccination of dogs in certain regions. It had been possible to eradicate the disease from badly affected provinces in 3 years by total vaccination of dogs, repeated annually, in conjunction with other methods. Among 900,000 dogs vaccinated only 0.008% vaccination accidents and 0.05% cases of post-vaccination paralysis had been recorded.

—G. V. LAUGIER.

LEFROU, G. & MARTIGNOLES, J. (1954). Sur l'emploi d'un vaccin antirabique formolé à usage vétérinaire en Afrique-Occidentale française. [Veterinary use of a formol rabies vaccine in French West Africa.] — *Rev. Elev.* 7, 61-68. 1650

The authors described a modification of the Plantureux technique for the production of formolized rabies vaccine. Virus is obtained by passage from the rabbit to monkeys (*Papio papio*). It is hoped eventually to produce a fixed monkey virus. The authors gave experimental data including optimum sites, number of injections and concentration of virus.

—G. V. LAUGIER.

OKADA, T. (1953). Studies on the inactivation methods of the virus for preparation of rabies vaccine.—*Jap. J. med. Sci. Biol.* 6,

577-586. [Abst. from abst. in *Trop. Dis. Bull.* 51, 1058-1059. (1954).] 1651

Knowing that rabies virus could be inactivated by thiomersal at 37°C. to produce an efficient vaccine the author investigated the possibility of using, instead of thiomersal, other antibacterial agents which he had found to possess little rabicidal power and which were likely, therefore, to cause little or no reduction of antigenicity. These agents were cobalt chloride, "acetosulphamine" and "marfanil" (sulphonamide drugs), and acridine dye. He found that each of the vaccines prepared by treating the virus with any one of these 4 agents was highly potent, relatively thermostable and sufficiently potent after storage at 5°C. for one year.

DE RITIS, F., GIUSTI, G. & VILLARI, V. (1954). Attività della imide dell'acido maleico (n-etyl-maleimide) sulla moltiplicazione virale. [Action of the imide of maleic acid (N-ethyl-maleimide) on the multiplication of influenza virus.]—*Arch. ges. Virusforsch.* 5, 432-440. [In Italian. English summary.] 1652

Injection of N-ethyl maleimide into chick embryos, 48, 24, 12 and 0 hours before infection with PR8 strain, inhibited virus growth for 24 hours after infection. Allantoic fluid was titrated 6, 12, 24 and 48 hours after infection and during the latter 24-hour period of incubation at 37°C. There was no significant difference between the haemagglutination titre of allantoic fluid from treated and untreated chick embryos.

The authors discussed the virus-inhibiting action of the compound in relation to protein synthesis and its capacity to inhibit sulphydryl groups.—E.G.

SCHAEFFER, M. & ARNOLD, E. H. (1954). Studies on the North American arthropod-borne encephalitides. I. Introduction. Contributions of newer field-laboratory approaches.—*Amer. J. Hyg.* 60, 231-236. 1653

The authors speculated on the natural history of the virus of eastern equine encephalomyelitis, and mentioned research at present in progress in the U.S.A. into the levels of infection in mosquitoes, birds, and other susceptible species. This work has shown that the virus titre in the blood of infected birds varies with the species, each species having a characteristic titre range, and that for each species of mosquito there is a threshold or minimal dose of virus required to produce infection. From

this it is apparent that in the multiplication and spread of the virus certain birds and mosquitoes, namely those with high blood titres and low infectivity thresholds respectively, must play a more important role than others.

It is intended to continue these studies to discover the main links in the chain of infection, and to establish which species constitute the main reservoirs of the virus in inter-epidemic periods. In this connexion the question of latent infection in birds will also be investigated.

The authors pointed out that from the broad point of view infection in horses and man may be regarded as fortuitous.—A.S.

HALE, J. H. & LEE, L. H. (1954). **A serological investigation of six encephalitis viruses isolated in Malaya.** — *Brit. J. exp. Path.* **35**, 426-433. [Survey of paper: p. i.] [Authors' summary modified.] 1654

The authors carried out a serological investigation of 6 strains of Japanese B encephalitis virus isolated from the brains of fatal human cases occurring in Malaya. Cross neutralization tests with immune sera using intracerebral inoculation in mice revealed that all were closely related: the viruses could be subdivided into 3 serological types by complement fixation and cross-resistance studies. One type differed markedly from the others and the authors considered the advisability of referring to it as Malaya encephalitis virus: they decided, however, to regard it as a serological type of Japanese B virus. They discussed the possible antigenic composition of the 3 serological types.

MATHEY, W. J., JR. (1955). **Avian encephalomyelitis in pheasants.**—*Cornell Vet.* **45**, 89-93. [Author's summary slightly modified.] 1655

Avian encephalomyelitis (or a similar virus disease) causing 25% mortality was reported from Mongolian pheasants in California. A further 25% of the pheasants had to be killed because of the severity of the disease. It was transmissible to chickens, guinea fowl, ring-necked pheasant chicks, and Mongolian pheasant chicks. The history indicated that the outbreak originated from inapparent infection of breeder pheasants by transmission from infected chickens.

Avian encephalomyelitis virus of fowl origin is capable of causing symptoms and death in guinea fowl.

LE BOUVIER, G. L. (1954). **Interference and cell protection by poliomyelitis virus in tissue culture.** [Correspondence.]—*Nature, Lond.* **174**, 649-650. 1656

The author compared the rates of destruction of monkey testicular tissue in roller-tube culture, (a) when infected with MEF₁ strain of type 2 poliomyelitis virus, (b) when infected with this virus and then 'superinfected' 5 days later with one or other of 3 other pathogenic strains of poliomyelitis virus by changing the suspending medium for another containing the new virus, and (c) in control cultures infected only with one or other of the 3 'superinfecting' viruses.

The results showed that the cells which survived the initial infection with MEF₁ virus were temporarily spared the destructive action of the 'superinfecting' viruses.—A.S.

ECKELL, O. A., VAGNI, O., ALVAREZ, E. & ANAYA, J. S. (1953). **Experiencias realizadas sobre un nuevo tratamiento de la encefalomyelitis infecciosa equina.** [Treatment of equine infectious encephalomyelitis.] — *Rev. Vet. milit., B. Aires.* **1**, No. 2, pp. 65-68. 1657

A mixture of urotropine, camphorated alcohol and swine fever antiserum was reported by Gerasimovich & Ulendeev [*V.B.* **19**, 961] to be 86% effective in the cure of equine infectious encephalomyelitis. The authors of the present work tested out the mixture on g. pigs and found that it had no curative effect whatsoever in these animals.—I. W. JENNINGS.

SORET, M. G. & SANDERS, M. (1954). **In vitro method for cultivating Eastern equine encephalomyelitis virus in teleost embryos.**—*Proc. Soc. exp. Biol., N.Y.* **87**, 526-529. 1658

The authors described the propagation of Eastern equine encephalomyelitis virus in embryos obtained from field specimens of an unidentified species of *Gambusia* (a fish found in waters around Bimini, British West Indies). They gave details of a simple method for obtaining supplies of sterile embryos. The embryos were maintained in 3-5 ml. of 5 parts of Hanks' salt solution plus one part of ox serum-ultrafiltrate at room temp. (23°-25°C.) in roller tubes rotating at 150-200 revolutions per hour. The potency of virus in individual cultures varied from 10^{-3.7} to 10^{-6.3} by mouse intracerebral tests, through 8 culture generations. Multiple neutralization tests with the cultured virus established its specific nature. The absence of latent viruses in the embryos was determined by frequent intracerebral inoculation into mice.—F.E.W.

MAHAMOOTH, T. M. Z. (1953). **The saga of control and eradication of rinderpest in Ceylon.**—*Ceylon vet. J.* **1**, 73-78. 1659

M. gave a historical account of rinderpest in Ceylon since the establishment of a Veterinary Service, and gave details of numbers of cattle affected and vaccines used between 1928 and 1947.—A.S.

BAKER, J. A., YORK, C. J., GILLESPIE, J. H. & MITCHELL, G. B. (1954). **Virus diarrhea in cattle.**—*Amer. J. vet. Res.* **15**, 525-531. [Authors' summary modified.] 1660

Two antigenically related strains of a virus were isolated from the organs of 2 adult cows with diarrhoea. Inoculation of susceptible calves intravenously or intranasally with this virus caused a diphasic rise in body temp., leucopenia, general malaise, and diarrhoea. With a few exceptions, the oral lesions described by Olafson [*V.B.* **18**, 313] as being typical of virus diarrhoea, were not seen in the calves. Out of 75 calves purchased from dairy farms in New York State, 55 were immune to inoculation of the virus, indicating that the infection may be widespread in this State.

The greatest conc. of virus in the blood and in the spleen was found in the interval between the two rises in body temp. (4 days after inoculation). Much smaller amounts of virus were present during the periods of elevated temp., and none was found 10 days after inoculation, when the fever had subsided. Isolation of the virus from field cases should, therefore, be attempted before the end of the second rise in temp.

After serial passages in rabbits the virus became modified, in that inoculation of calves after 74 passages produced only a slight decrease in leucocytes, and a rise in temp. which lasted for one day only. This modified virus gave complete protection against the fully virulent virus.

WENNER, H. A., MENGES, R. W. & CARTER, J. (1955). **Sporadic bovine encephalomyelitis. A serologic survey of cattle in the mid-western United States.**—*Cornell Vet.* **45**, 68-77. [Authors' summary modified.] 1661

A serological survey among cattle in herds experiencing outbreaks of sporadic bovine encephalomyelitis indicated that the virus gives rise to infection without clinical evidence of disease of the c.n.s., the majority of the animals undergoing subclinical infections. By the time cattle are mature, 50% or more have acquired complement-fixing antibodies to lygranum [a commercially prepared antigen for diagnosis of lymphogranuloma venereum] and bovine encephalomyelitis in titres of 1:8 or higher.

JARRETT, W. F. H. (1954). **Atypical pneumonia in calves.**—*J. Path. Bact.* **67**, 441-454. [Author's summary modified.] 1662

In a series of 50 consecutive necropsies on calves 32 cases of pneumonia were found, of which 13 were atypical. These were divided into two groups on a broad histological basis: group A (6 cases), in which the common lesion was alveolar epithelialization, and group B (5 cases), of which the striking feature was an extensive peribronchial lymphoid hyperplasia. The histology of one group A case was very similar to that found in the pneumonias associated with measles in man and with "hard-pad" disease in dogs. It was suggested that a virus might be responsible for the calf disease. Two other group-A cases presented morphological features compatible with a virus aetiology, but a definite conclusion was not possible on histological grounds alone. Group B comprised cases which had morphological similarities to grey-lung virus disease in mice and cotton rats, virus pneumonia of pigs and a spontaneous disease found in the author's stock g. pigs. J. discussed the possible infective agents involved in the bovine cases and gave an account of the experimental transmission of the disease.

GOODWIN, R. F. W., SAISON, R. & COOMBS, R. R. A. (1955). **The blood groups of the pig. II. Red cell iso-antibodies in the sera of pigs injected with crystal violet swine fever vaccine.**—*J. comp. Path.* **65**, 79-92. [Authors' summary copied *verbatim*.] 1663

Injections of crystal violet swine fever vaccine experimentally into young pigs stimulated the production of red cell iso-antibodies. After repeated injections, the titre of these antibodies in some pigs reached a high level.

Examination of sera from pigs in the field showed that a very large proportion of animals that had received more than one prophylactic injection of crystal violet swine fever vaccine had a high titre of red cell immune iso-antibodies. The production of these high titred iso-antibodies in sows may render them liable to have litters affected with haemolytic disease due to blood group incompatibility.

IMAGAWA, D. T., YOSHIMORI, M., WRIGHT, S. W. & ADAMS, J. M. (1954). **Serum neutralization of distemper virus in chick embryos.**—*Proc. Soc. exp. Biol., N.Y.* **87**, 2-5. [Authors' summary modified.] 1664

Virus-neutralization tests were carried out in chick embryos employing the egg-adapted distemper virus and various samples of serum. Ferrets with serum containing no demonstrable

antibody at 1:40 dilution all succumbed to 100 m.l.d. of ferret distemper virus, whereas ferrets showing antibody in 1:60 dilution of serum all survived the same challenge dose. This suggests that the results of serum-neutralization tests in chick embryos have a definite correlation with ferret protection tests. Human γ -globulin and some samples of human serum have neutralizing substances in titres as high as those known to exist in immune ferret serum. On the other hand, samples of serum from normal premature infants did not show any neutralizing substances in 1:40 dilution of the serum.

GOGOLAK, F. M. (1954). **The mouse erythrocyte haemagglutinin of feline pneumonitis virus.**—*J. infect. Dis.* **95**, 220-225. [Authors' summary modified.] **1665**

G. found that feline pneumonitis virus, grown in the allantoic cavity of embryonated eggs, produces a mouse erythrocyte haemagglutinin similar to that produced by the meningo-pneumonitis virus described by Haig & Hilleman (1950).

Virtually complete separation of the haemagglutinin from the virus particle was achieved by sedimentation of the infective agent. Chick embryo titrations revealed that over 99.9% of the virus was removed from the infected allantoic fluid, with retention of the original haemagglutinin titre in the supernatant.

The haemagglutinin of feline pneumonitis virus could be concentrated by ultracentrifugation or by a method involving adsorption of the activity on allantoic fluid precipitate.

The rise in titre of both virus and haemagglutinin in the allantoic fluid of infected embryos was studied. The production was dependent upon the growth of the virus in the allantoic cavity, though the rates of increment were not strictly proportional. Infected allantoic fluids with different haemagglutinin titres were found to have approx. the same virus concentration.

SHANKS, P. L., SHARMAN, G. A. M., ALLAN, R., DONALD, L. G., YOUNG, S. & MARR, T. G. (1955). **Experiments with myxomatosis in the Hebrides.**—*Brit. vet. J.* **111**, 25-30. [Authors' summary modified.] **1666**

When myxomatosis was introduced in July to the Heisker islands, which were overrun with rabbits, it failed to cause a widespread outbreak of the disease, possibly because of the lack of insect vectors. In the following spring, however, there was a sharp drop in the rabbit population on one island, and it was assumed that the disease had survived the winter and

that rabbit fleas were responsible for its survival. Following a drastic reduction in the rabbit population the disease died out. The authors suggested that in the absence of biting insects which fly there has to be a certain minimum rabbit population before fleas can keep the infection alive. From this assumption it would follow that during the winter when there are no biting insects except fleas the disease would fairly certainly die out in an area severely depleted of wild rabbits. Surviving rabbits would breed during the ensuing year and unless fresh infection were introduced the rabbit population would quickly increase. Applying this reasoning to the outbreaks in Britain they suggested that the disease, after causing a very considerable reduction in the rabbit population, would eventually disappear unless fresh infection were introduced from time to time.

BRAUNSTEINER, H. & FRIEND, C. (1954). **Viral hepatitis associated with transplantable mouse leukaemia. I. Acute hepatic manifestations following treatment with urethane or methylformamide.**—*J. exp. Med.* **100**, 665-674. [Authors' summary modified.] **1667**

The authors described a hepatic disease caused by a filtrable agent from leukaemic mice. Ordinarily the virus remains latent and asymptomatic, but if the mice are treated with urethane or methylformamide before and after virus inoculation, the disease becomes manifest and is characterized by extremely marked liver necrosis.

Infant mice, a large percentage of weanlings, and adult Bagg albino mice were killed when injected with a filtrate from organs of diseased animals. Adult F1 first filial generation of C58 \times Bagg albino crosses and Swiss mice showed signs of the disease but generally recovered. They succumbed, however, when simultaneously treated with urethane or methylformamide. With continued administration of these drugs to consecutive passage groups of mice, an acute disease could be induced which finally killed all adult F1 mice without the treatment. At this stage the original leukaemia was sometimes lost.

Mice which had recovered from the subacute disease were resistant to the acute disease, and mice injected with the latent form of the agent were immune to the subacute disease. However, even immunized animals lost their resistance when treated with urethane. The virus of acute or subacute disease could be

reduced to the latent stage by several passages in immunized animals.

The authors discussed the relationship of the mouse hepatitis virus described to viruses causing similar diseases, and also the possibility that these agents are closely related, if not identical.

REAGAN, R. L., DELAHÄ, E. C., COOK, S. R. & BRUECKNER, A. L. (1954). **Response of kittens to the California strain of Newcastle disease virus (NDV) after oral and nasal routes of exposure.** — *Poult. Sci.* **33**, 1275-1276. **1668**

Five kittens, 2 weeks old, were given *per os* 1 ml. of the California strain of NDV and 5 more were nasally instilled with 0.5 ml. of the virus. None developed apparent symptoms of Newcastle disease. They were killed 14 days after inoculation. Ten-day-old chick embryos inoculated with 0.2 ml. of 20% brain suspension in saline from each group, remained healthy and viable after 10 days of incubation. It was concluded that kittens are not susceptible to infection with this strain of NDV by the oral or nasal routes.—F.E.W.

GARDNER, E., JR., WALLACE, J. H., DODD, M. C. & WRIGHT, C-S. (1954). **Antigenically modified red cells in chickens infected with Newcastle disease.** — *Proc. Soc. exp. Biol. N.Y.* **87**, 253-257. [Authors' summary modified.] **1669**

The authors prepared antisera specific for either Newcastle disease virus (NDV) or influenza virus-treated chicken erythrocytes. Using the latter antiserum they detected virus-modified erythrocytes in chickens infected with NDV by various routes. Haemagglutinins for NDV-treated chicken erythrocytes were also detected in the serum of infected chickens.

REAGAN, R. L., DELAHA, E. C., COOK, S. R. & BRUECKNER, A. L. (1954). **Electron microscope study at various hourly intervals of erythrocytes from adult chickens infected with Newcastle disease virus (NDV).** — *Poult. Sci.* **33**, 1209-1216. [Authors' summary modified.] **1670**

Electron micrographs of r.b.c. of adult fowls from which blood was withdrawn at 24-hour intervals following i/m injection with the California strain (11,914) of Newcastle disease virus, revealed virus-like particles similar to those of N.D.V. in the samples withdrawn 48, 72, and 96 hours after inoculation. The maximum number of such particles was observed 96 hours after inoculation, the time at

which the infected fowls exhibited severe symptoms of Newcastle disease. This was verified by infectivity tests conducted with 9-day-old chick embryos. Neutralization tests proved the virus to be that of Newcastle disease.

WEIDENMÜLLER, H. (1954). Über die nach einer Schutzimpfung mit Mono- und Bivakzine gegen Geflügelpest und Geflügelpocken im Serum auftretenden Agglutinine und im Hämagglutinationshemmungstest nachweisbaren Antikörper gegen Geflügelpest. [Demonstration by the haemagglutination-inhibition reaction of Newcastle disease antibodies in the serum of fowls immunized with mono- and bivalent Newcastle disease-fowl pox vaccines.] — *Tierärztl. Umsch.* **9**, 129-131. **1671**

Twenty-four cockerels, 4-5 months old, were immunized with mono- and bivalent Newcastle disease and fowl pox vaccines and were later challenged with virus. The agglutinin titre rose three days after challenge and remained high for two days. The H.I. titre rose beyond the normal values on the third day (later in unvaccinated controls) and then continued to rise steadily while the agglutinin titre fell.—W. G. SILLER.

WHITNEY, E. & GNESH, G. M. (1954). **Potent psittacosis antigens free of anticomplementary activity.** — *Proc. Soc. exp. Biol., N.Y.* **87**, 356-360. [Authors' summary modified.] **1672**

The authors described a method for the preparation of psittacosis antigen of satisfactory potency. When freeze dried, the antigen was free from anticomplementary activity, stable for a test period of four months, apparently more sensitive than a lymphogranuloma venereum antigen in the detection of psittacosis antibodies, and apparently free from non-specific properties.

VOLKERT, M. & CHRISTENSEN, P. M. (1954). **Studies on ornithosis in Denmark.** — *Acta. path. microbiol. scand.* **35**, 584-590. [In English.] **1673**

An account of a serological survey of the incidence of psittacosis in human beings in Denmark by means of the complement-fixation test using psittacosis virus and lymphogranuloma ("lygranum") antigens. Of 20 persons employed in the sale of cage birds, 18 were reactors in titres from 1:30 to 1:960 and 8 of these were clinically ill with psittacosis. Of blood samples from 870 patients, mainly with atypical pneumonia, 50 were reactors in titres

of 1:60 to 1:960 and 26 others were weakly positive (1:25 to 1:30). The virus was isolated from a sick parrot and 2 out of 7 parrots and 2 out of 28 budgerigars reacted in moderate titres to the c.f. test. As 4 of the human patients had no history of contact with cage birds, 52 pigeons were tested serologically and 16 were reactors in titres of 1:30 or higher. The "lygranum" antigen gave results comparable with those obtained with the specific antigen and appeared to be suitable for routine work.

—F.E.W.

HUDSON, C. B., BIVINS, J. A., BEAUDETTE, F. R. & TUDOR, D. C. (1955). Use of the chicken embryo technique for diagnosis of psittacosis in avian hosts, with epidemiological notes.—*J. Amer. vet. med. Ass.* **126**, 111-117. [Authors' summary modified.] **1674**

Eighty-five birds of eight species in 51 consignments were examined for psittacosis by P.M. examination and isolation of the virus in chick embryos. As judged by embryo deaths, virus was recovered from 16 birds in 11 consignments, all parakeets. Three other cases (a parrot, a canary and a parakeet) gave irregular results. In most instances, the mortality in nestlings was higher than in adults. Two cases were in birds kept in basements, and in 5 cases, the birds had recently been purchased from a retailer or had been shipped.

DUNHAM, W. B. (1954). Differential inhibition of virus haemagglutination by chlorophyllin.—*Proc. Soc. exp. Biol., N.Y.* **87**, 431-433. [Author's summary modified.] **1675**

Copper chlorophyllin inhibited haemagglutination by influenza A and mumps viruses, and to a greater extent, haemagglutination by Newcastle disease virus. The active constituent could not be separated by dialysis. Part, at least, of the inhibition appeared to be due to a direct action of the chlorophyllin on the virus.

TAYLOR, A., MCKENNA, G. F., BURLAGE, H. M. & STOKES, D.-M. (1954). Plant extracts tested against egg cultivated viruses.—*Tex. Rep. Biol. Med.* **12**, 551-557. [Authors' summary modified.] **1676**

Egg-adapted strains of vaccinia, influenza, meningopneumonitis and encephalitis viruses were used to test the antiviral activity of a series of plant extracts. The viruses were inoculated into embryonated eggs *via* the yolk sac, the plant extracts being later introduced over the

blood vessels of the area vasculosa at dosages well tolerated by mice and 11-day chick embryos. Twenty-two of the 44 plants tested yielded extracts which prolonged the life of 20% or more of chick embryos infected with one or other of the 4 viruses. In 3 instances individual plants yielded extracts which had a deterrent effect on 3 of the 4 viruses.

PHILIP, C. B., HUGHES, L. E., LOCKER, B. & HADLOW, W. J. (1954). Salmon poisoning disease of canines. II. Further observations on etiologic agent.—*Proc. Soc. exp. Biol., N.Y.* **87**, 397-400. [Authors' summary modified. For part I, see *V.B.* **25**, 693.] **1677**

In studies on the method of persistence of the rickettsia-like agent of salmon poisoning disease of dogs, *Neorickettsia helminthoeca*, the authors failed to infect dogs by the injection of eggs laid by flukes, *Nanophyetus salmincola*, from infected dogs. Of five other tests in which dogs were given flukes at various stages from dissected livers of snails, *Goniobasis* from the endemic area in Oregon, two resulted in infection, the dogs developing characteristic infections, which were confirmed pathologically, after unusually prolonged incubation periods. Flukes and lymph node tissues from dogs which had recovered after antibiotic treatment, and flukes from a racoon which had proved refractory to the disease, were shown to be infective. As little as 250 mg. of aureomycin at one feeding saved 15-pound beagles when given as late as the fourth day of fever, while controls died. In one titration experiment, lymph node suspension was found to be infectious in a dilution of $10^{-6.7}$. Although the agent has been assigned to the Rickettsiaceae the authors considered it to be generically distinct from *Ehrlichia canis* and *Colesiotea* spp.

The authors suggested that it would be advisable to use the orthography *helminthoeca* instead of the original *helmintheca* in order to preserve the true etymology of the name, as the long "e" would probably be lost sight of in future publications.

ALLEN, E. G., BOVARNICK, M. R. & SNYDER, J. C. (1954). The effect of irradiation with ultraviolet light on various properties of typhus rickettsiae.—*J. Bact.* **67**, 718-723. **1678**

By subjecting suspensions of epidemic typhus rickettsia to short periods of irradiation with ultra-violet light the authors obtained a

10⁴- to 10⁵-fold reduction in infectivity for chick embryos and cotton rats without marked loss in toxicity for mice, haemolytic activity or respiration.

See also absts. 1581 (bacteriophage); 1752 (mixed infection with brucellosis and Q fever); 1836 (report, Western Australia); 1837 (report, Union of South Africa); 1839 (report, Uganda Protectorate); 1841 (textbook, microbiology); 1843 (book, psittacosis).

IMMUNITY

I. & II. LEVINE, L., COWAN, K. M., OSLER, A. G. & MAYER, M. M. (1953). **Studies on the role of Ca⁺⁺ and Mg⁺⁺ in complement fixation and immune hemolysis. I. Uptake of complement nitrogen by specific precipitates and its inhibition by ethylene diamine tetra acetate. II. The essential role of calcium in complement fixation.**—*J. Immunol.* 71, 359-366 & 367-373.

III. LEVINE, L., OSLER, A. G. & MAYER, M. M. (1953). **Studies on the role of Ca⁺⁺ and Mg⁺⁺ in complement fixation and immune hemolysis. III. The respective roles of Ca⁺⁺ and Mg⁺⁺ in immune hemolysis.**—*Ibid.* 374-384. 1679

I & II. Ethylene diamine tetra acetate (EDTA) inhibited specific complement fixation, but this could be reversed by the addition of the cations Ca and Mg and by cobalt sulphate which displaces these cations from EDTA.

Only the divalent cation Ca⁺⁺ reactivated complement inhibited by EDTA.

III. By means of EDTA inhibition and kinetic analyses it was shown that there are at least two stages in immune haemolysis. The primary stage requires Ca ions specifically. The second stage requires Mg, but this cation can be replaced by other ions.

—E. J. L. SOULSBY.

OAKLEY, C. L., WARRACK, G. H. & BATTY, I. (1954). **Antibody production in transplants.**—*J. Path. Bact.* 67, 485-505. [Authors' summary slightly modified.] 1680

The results of homoeoplastic transplantation of rabbit fat or muscle secondarily stimulated with diphtheria or tetanus alum-precipitated toxoid (A.P.T.), or of rabbit popliteal glands draining feet which had been injected with these antigens, indicated that such transplants continue to produce antitoxin in the recipients very much as they would have done had they remained in the donors. For rabbit fat to produce antitoxin in the recipient, it must apparently remain *in situ* in the donor for at least 24 hours after secondary stimulation before it is transplanted, and it must be transplanted intact.

Heteroplastic transplants of tissues second-

arily stimulated with diphtheria A.P.T. failed to produce antitoxin in the recipients.

In rabbits secondarily stimulated with diphtheria A.P.T. the injected area produces far more antitoxin per g. than does the remainder of the body, a result hardly to be expected if the secondary response were a reaction to a "stress" leading to generalized release of preformed antitoxin.

HAVENS, W. P., JR., BOCK, D. G. & SIEGEL, I. (1954). **Capacity of seriously wounded patients to produce antibody.**—*Amer. J. med. Sci.* 228, 251-255. [Authors' summary slightly modified.] 1681

The amounts of antitoxin produced by 15 Schick-negative patients with severe wounds and hypo-albuminaemia and 11 normal Schick-negative persons following the intramuscular injection of 50 Lf [limit for flocculation] purified diphtheria toxoid were measured by titration in the skin of rabbits. Comparison of the maximum measured amounts of antitoxin found in both groups revealed that the severely wounded patients had, on the average, slightly greater amounts of antibody than the controls.

The only apparent significant relationship between the condition of the patients or controls before inoculation with toxoid and the amount of antitoxin subsequently produced was the general tendency for the magnitude of immunological response to be dependent on the amount of pre-Schick circulating antitoxin.

HARRIS, T. N. & HARRIS, S. (1953). **Agglutination by human sera of erythrocytes incubated with streptococcal culture concentrates.**—*J. Bact.* 66, 159-165. 1682

Serum samples from healthy human beings frequently agglutinated sheep erythrocytes treated with Group A streptococcus culture concentrates (using the technique described by Keogh). No rise in titre was found during acute rheumatic fever nor, as a rule, during scarlet fever.—J. E. SMITH.

SAISON, R., GOODWIN, R. F. W. & COOMBS, R. R. A. (1955). **The blood groups of the pig. I. The interaction of pig red cells of group**

A and the naturally occurring A iso-antibody in the serum of pigs of blood group O. — *J. comp. Path.* **65**, 71-78. [Authors' summary copied *verbatim*.] **1683**

The direct agglutination reaction is unsuited for the unequivocal recognition of pig group A cells with the naturally occurring A iso-antibody. The anti-globulin sensitization test is a reliable method for detecting the interaction. The previous treatment of group A cells with trypsin allows them to be agglutinated by the A iso-antibody, but this method is not as sensitive as the anti-globulin sensitization test.

Many animals previously grouped as O₀ (no A antigen on the cells and no anti-A in the serum) probably in fact belonged to group Oa (no antigen on the cells but containing anti-A in the serum).

Injections of large doses of pig gastric mucoid possessing A activity into a single pig of group Oa did not raise the level of anti-A in the serum; in fact the existing level of anti-A was suppressed.

BAER, H. (1955). A study of some naturally occurring precipitins and agglutinins of the chicken: reaction with purified blood group substances and human red blood cells. — *J. Immunol.* **74**, 27-31. [Author's summary modified.] **1684**

It has been found that the sera of some fowls can precipitate with purified blood group substances of porcine and human origin, the

ability to precipitate being independent of the blood group activity of the substances. All fowls so far studied possessed agglutinins for human red cells. The agglutinins were found to be different from the precipitins but both had properties which indicate that they are antibodies.

HOWARD, F. A. & CRONIN, M. T. I. (1955). Colostral transfer of anti-erythrocyte agglutinins from mare to foal. — *J. Amer. vet. med. Ass.* **126**, 93-94. [Authors' conclusions modified.] **1685**

An account of a case which indicated that there may be exceptions to the general recommendation [V.B. **20**, 1987] that 36 hours after birth it is safe for a foal to be suckled by a mare whose colostrum has contained anti-erythrocytic antibody, if the mare has been thoroughly and frequently hand-milked. Apart from the possible presence of antibody in the mare's milk, the possibility in exceptional foals of absorption of antibody from the alimentary tract after 36 hours of age may be a source of danger. The authors suggested that when a mare is found to have a colostral indirect agglutination titre of 1:4 or more, 36 hours after foaling, the foal's erythrocytes should be examined about 24 hours after it has begun to suck, for the early detection of any possible sensitization. Should any sensitization be found, the foal should be kept under observation and be subjected to daily haematological examinations.

See also absts. 1567-1568 (TB.); 1572 (Johne's disease); 1574 (swine erysipelas); 1578 (haemorrhagic septicaemia in cattle); 1579 (haemagglutination and pathogenicity of *Haemophilus* isolated from human eyes); 1588 (Salmonella Group); 1589-1597 (brucellosis); 1600 (leptospirosis); 1602 (Cl. welchii infection); 1645-1646 (F. & M. disease); 1649-1651 (rabies); 1659 (rinderpest); 1663 (swine fever); 1664 (distemper); 1665 (feline pneumonitis); 1668-1671 (Newcastle disease); 1672-1674 (psittacosis); 1675 (differential inhibition of virus haemagglutination by chlorophyllin); 1697 (nematodes); 1837 (report, Union of South Africa); 1838 (report, Colony of Fiji).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

FIEDLER, O. G. H. & KLUGE, E. B. (1954). The parasites of tsetse flies in Zululand with special reference to the influence of the hosts upon them. — *Onderstepoort, J. vet. Res.* **26**, 399-404. **1686**

Two species of Diptera, and three species of Hymenoptera, which parasitize the pupae of *Glossina pallidipes*, *G. brevipalpis*, and *G. austeni*, were discovered during a survey in Zululand. Each of the species attacked *G. pallidipes*, and *G. brevipalpis*, but only two of them attacked *G. austeni*. It was noted that the size of the puparium of the host species influenced the size of the parasite, and that the small pupae of *G. austeni* were seldom para-

sitized. The dipterous fly *Thyridanthrax brevifacies* was the most commonly found.

—D.W. JOLLY.

HUGHES, T. E. (1954). Some histological changes which occur in the gut epithelium of *Ixodes ricinus* females during gorging and up to oviposition. — *Ann. trop. Med. Parasit.* **48**, 397-404. [Author's summary modified.] **1687**

The gut of unfed *Ixodes ricinus* contains an eosinophile colloid material which disintegrates the red cells of the ingested blood. Cells containing a similar colloid are proliferated from the gut epithelium during feeding.

Cells of subsequent proliferations contain no such colloid, but they absorb and metabolize the blood mass. Dark excretory granules containing haematin and a melanin are produced in these cells, which then disintegrate into the lumen. A lipid material, probably derived from the red-cell envelopes, is present in the gut lumen and is absorbed by the gut epithelium. This lipid may well contribute to the reserve fat carried over from one instar to another in the immature stages or to the egg yolk in the female during maturation of the eggs. The lipid may also be the source of the grease which is excreted through the cuticle during digestion of the blood-meal.

RADFORD, C. D. (1954). The larval genera and species of 'harvest mites' (Acarina: Trombiculidae). — *Parasitology*. 44, 247-276. 1688

R. give a list of the new genera, and species of the sub-family Trombiculidae, which have been discovered, or re-classified, as a result of recent surveys. He included data on dorsal scuta of 108 different species of mites. He listed 162 references.—D. W. JOLLY.

SIKES, R. K. & CHAMBERLAIN, R. W. (1954). Laboratory observations on three species of

bird mites. — *J. Parasit.* 40, 691-697.

[Authors' summary slightly modified.] 1689

Observations were made on the behaviour of *Bdellonyssus bursa*, *Bd. sylviarum*, and *Dermanyssus gallinae* in laboratory colonies. Their feeding habits, life cycles, weights and measurements of various stages, and volumes of blood ingested were compared. Under experimental conditions, all three species fed readily upon mice and rabbits as well as chicks, but only a few *D. gallinae* could be induced to feed upon man.

VAN GREMBERGEN, G. (1954). Behandeling van verenschurft bij de duif. [Treatment of depluming mites in pigeons.] — *Vlaam. diergeneesk. Tijdschr.* 23, 288-290. [English, French and German summaries.] 1690

Pigeons infested with *Cnemidocoptes laevis* were bathed with "Alcanox" (a detergent) followed by the application of "Jacutan flüssig" (a preparation of benzene hexachloride). After the first treatment mites were still present in one case. The treatment was repeated after 8-14 days with satisfactory results.

—C. A. VAN DORSSEN.

PARASITES IN RELATION TO DISEASE [HELMINTHS]

DINNIK, J. A. (1954). *Paramphistomum sukari* n. sp. from Kenya cattle and its intermediate host. — *Parasitology*. 44, 414-421. 1691

A description of *P. sukari* n. sp., found in the reticulum of cattle in Kenya. The snail *Biomphalaria pfeifferi* acted as an intermediate host. There is no evidence of any pathogenic effect.—R.M.

VEGORS, H. H. ((1954). Experimental infection of calves with *Strongyloides papillosus* (Nematoda).—*Amer. J. vet. Res.* 15, 429-433. [Author's summary modified.] 1692

When calves were infested with *Strongyloides papillosus* larvae by mouth, the number of eggs subsequently passed in the faeces was negligible compared with the number passed by calves infested by application of the larvae to the skin. The prepatent period ranged from 9-11 days. Seven out of 16 calves died as a result of infestations; those aged 4-5 months at the time when first dosed survived infestation longer than those aged 7-19 days.

The commonest symptoms were intermittent diarrhoea, sometimes mucoid and blood-tinged, loss of appetite, loss of condition, and retarded

tion of growth. The daily body wt. gain of severely infested calves was 35-79% less than that of comparable controls. The worms produced catarrhal inflammation of the small intestine, with petechiae and ecchymoses.

The minimum number of larvae which resulted in fatal infestation was 200,000 in calves aged 7-19 days, and one million in calves aged 4-5 months.

LONG, J. D. & JOHNSON, C. C. (1953). Heat treatment of garbage to control disease. — *Proc. 56th Ann. Meet. U.S. live Stk. sanit. Ass.* pp. 224-229. 1693

The authors discussed methods of cooking swill for pigs, and concluded that boiling for 30 min. was sufficient to kill larvae of *Trichinella spiralis* in pieces of pork up to 3 inches thick.—R.M.

LEVINE, N. D. & IVENS, V. (1954). The effects of some phenothiazine derivatives and analogs on the free-living stages of horse strongyles. — *Amer. J. vet. Res.* 15, 349-351. 1694

Horse strongyle larvae in faeces were exposed for one week to phenothiazine, or one of

23 related compounds, at a concentration range of 0.1–0.005 M. Three analogues of phenothiazine, and two related aliphatic compounds, were more effective than phenothiazine itself. This increase in the toxicity of phenothiazine to the worms was obtained by substitution of sulphur by nitrogen, or the replacement of the phenyl groups of di-phenyl amine by alkyl groups.—D. W. JOLLY.

DUNN, D. R. & WHITE, E. G. (1954). **Lungworms (*Metastrongylus* spp.) in pigs, and their development in the guinea pig.** [Correspondence.] — *Nature, Lond.* **174**, 1193–1194. 1695

A survey of lungworm infestation in 1308 slaughtered pigs revealed that 18% were affected. Eggs were demonstrable in pig faeces by flotation with a saturated soln. of magnesium sulphate; better results were obtained than with sodium chloride. Adult *M. apri*, were established in over 50% of 116 g. pigs dosed *per os* with infective larvae taken from the earthworm *Eisenia foetida*.

—D. W. JOLLY.

BULL, P. C. (1955). **Population regulation in rabbit nematodes.** [Correspondence.] — *Nature, Lond.* **175**, 218–219. 1696

The number of *Trichostrongylus retortaeformis* infesting wild rabbits in New Zealand was estimated using a dilution sampling technique. The dead body wt. of the rabbits, under 1000 g., provided an indication of their age. Although heavy infestations were found in some rabbits of all weights, there was a tendency for the older rabbits to have the lower worm burden. There was evidence of the "self cure" mechanism operating in some individuals.—D. W. JOLLY.

THORSON, R. E. (1954). **Absorption of protective antibodies from serum of rats immune to the nematode, *Nippostrongylus muris*.** —*J. Parasit.* **40**, 300–303. [Abst. from author's summary.] 1697

Rats were repeatedly dosed with infective larvae of *N. muris*. Antibodies that developed were absorbed from the serum of these rats (a) by a saline extract of ground-up lyophilized larvae or (b) by saline containing the secretions and excretions of living larvae. The immune serum which was absorbed by extract B lost part of its protective capacity when it was injected with infective larvae of *N. muris* into rats, whereas the serum absorbed by extract A and similarly tested was found to have lost none of its protective capacity.

SPRENT, J. F. A. (1954). **The life cycles of nematodes in the family Ascarididae Blanchard 1896.**—*J. Parasit.* **40**, 608–617. [57 refs.] [Author's summary modified.] 1698

S. discussed evidence for the utilization of intermediate hosts by members of the Family ASCARIDIDAE; this appears to be a widespread feature, occurring in both terrestrial and aquatic members of the two subfamilies ANISAKINAE and ASCARIDINAE.

The use of intermediate hosts is regarded as a primitive characteristic. The various species of animals at present known to be used for this purpose indicate the possibility that this family originated as parasites of marine arthropods, and that spread has occurred amongst marine animals through the use of marine invertebrates and fish as intermediate hosts. The spread to terrestrial animals may have occurred through terrestrial coprophagous animals, such as rodents, swallowing ascaridid eggs from the faeces of littoral animals. By harbouring encysted larvae in their tissues, rodents may have become intermediate hosts for the ascaridids of many terrestrial carnivorous animals.

In extending their range to non-carnivorous hosts, the ascaridids have modified the migratory behaviour of the larvae so as to dispense with intermediate hosts, and promote infection of the final host through the ingestion of the embryonated eggs. In some species, *e.g.* *Toxocara canis*, the somatic type of migration has been retained and infection occurs through penetration of the larvae into the foetus; in other species, *e.g.* *A. suis*, the somatic migration has been dispensed with in favour of tracheal migration; in *T. leonina*, migration has been limited to the abdominal region so that the larvae may return to the intestine directly.

I. REFUERZO, P. G. & ALBIS-JIMENEZ, F. S. (1954). **Studies on *Neoascaris vitulorum*.**

II. **The resistance of the ova to certain chemical agents and physical factors under tropical conditions.**—*Amer. J. vet. Res.* **15**, 440–443. [Part I not yet published.] 1699

II. REFUERZO, P. G. & ALBIS-JIMENEZ, F. S. (1954). **Studies on *Neoascaris vitulorum*.**

III. **Further observations on inoculation of calves with notes on prenatal infection.** —*Ibid.* 532–534. [Authors' summaries modified.] 1700

I. The authors studied the resistance of eggs of *Ascaris vitulorum* to chemical and physical agents under tropical conditions in the

Philippines. Washed eggs were killed by exposure for 3 hours or more to tropical sunlight; the resistance of non-embryonated eggs was lower than that of embryonated eggs. Eggs protected by faeces were able to survive longer periods of exposure to sunlight, depending on the temp., the size of the faecal mass, the amount of rainfall, and the amount of vegetation. Eggs were resistant to desiccation and to the usual disinfectant conc. of phenol and cresol. While water at 92°–100°C. was highly lethal to washed eggs, it was only partially effective when applied to eggs within faeces. In view of these findings, the authors suggested pasture rotation once every 3–4 months, under the conditions prevailing in the Philippines.

II. Twenty calves aged 1–13 days were each fed a single dose of 5,000 eggs of *A. vitulorum* with negative results, in that no eggs were found in the faeces up to 120 days after infestation. The authors described natural infestation with this nematode in 18 calves and in 17 buffalo calves, all of them aged 14–30 days. They attributed the early appearance of eggs and ovigerous worms in these calves to prenatal infestation, which is probably the principal mode of transmission of *A. vitulorum*. They discussed the mechanism of prenatal infestation and the migratory behaviour of the larvae in the host.

LEE, R. P. (1955). The anthelmintic efficiency of piperazine adipate against *Neoascaris vitulorum* (Goeze, 1782). — *Vet. Rec.* **67**, 146–149. [Author's summary slightly modified.] 1701

Piperazine adipate administered to zebu calves in Nigeria at rates of from 0.1 to 0.3 g. per lb. body wt. produced no toxic reactions. When administered at the rate of 0.1 or 0.2 g. per lb. to calves harbouring *Ascaris vitulorum* infestations eggs disappeared from the faeces within 5 days of treatment. Critical anthelmintic tests showed it to be 100% effective against immature and mature *A. vitulorum* at dosage rate of 0.1 g. per lb. The drug had no effect on the development of eggs removed from worms expelled as a result of these treatments.

POYNTER, D. (1955). Piperazine adipate as an equine anthelmintic. — *Vet. Rec.* **67**, 159–163. [Author's summary modified.] 1702

As a result of tests on 14 horses P. concluded that piperazine adipate at a dosage rate of 10 g. per 100 lb. body wt. is an efficient anthelmintic against *Ascaris equorum* and the small strongyles of horses. It was partially

effective against *Strongylus vulgaris*, but had little or no action on *S. edentatus* nor on the larvae of *Gasterophilus*.

Diethylcarbamazine acid citrate at a rate of 2.5 g. per 100 lb. body wt. markedly reduced the egg count of *A. equorum*.

HERLICH, H. & STEWART, T. B. (1954). Transmission of cattle nematodes to sheep. — *Proc. helm. Soc. Wash.* **21**, 121–123. [Abst. from authors' summary.] 1703

In an experiment with 13 sheep the authors found that fresh infective larvae of *Ostertagia ostertagi* and of *Oesophagostomum radiatum* of cattle were able to maintain themselves for short periods in sheep. In sheep that acquired infestation with the latter worm, tissue penetration and gross lesions similar to the findings in cattle were observed at P.M. examination. Older larvae that had been exposed to adverse climatic conditions failed to establish themselves in sheep.

BAKER, N. F., LONGHURST, W. M., TORELL, D. T. & WEIR, W. C. (1954). Preliminary studies of parasitism in sheep on rangelands. — *Amer. J. vet. Res.* **15**, 356–360. 1704

The commonest helminth parasites of lambs aged 2–6 months on hill pastures in California were *Ostertagia circumcincta*, *Trichostrongylus vitrinus*, *Nematodirus filicollis*, and *N. spathiger*. A sample of phenothiazine used was ineffective against these nematodes, possibly as a result of using a preparation containing abnormally large particles of phenothiazine.

—R.M.

CROFTON, H. D. (1954). Nematode parasite populations in sheep on lowland farms. I. Worm egg counts in ewes. — *Parasitology*, **44**, 465–477. [Author's summary modified.] 1705

C. gave details of worm egg counts carried out on faeces from 3 flocks of ewes over a period of 3 years. Counts were highest in spring and in late summer. The spring increase was of short duration, and it coincided with lambing time. He suggested that the summer increase was due to a reduction in food intake, and therefore in the volume of faeces passed by the ewes, during the first week after separation from their lambs. He described the seasonal incidence of different species of nematodes.

BOCH, J. (1954). Die Anwendung proteolytischer Fermente bei Nematodenbefall der Pelztier. [Use of proteolytic enzymes for

the control of nematode parasites in fur animals.] — *Berl. Münch. tierärztl. Wschr.* **67**, 268-270. [English summary.] **1706**

A proteolytic enzyme from *Carica papaya*, given by mouth in appropriate dosage, was

effective against ascarids, hookworms and whipworms in 20 adult foxes and 24 cubs, all naturally infested; it was harmless to the foxes, even during pregnancy. [See also *V.B.* **23**, 1988.]—W. G. SILLER.

See also *absts.* **1835** (report, Northern Ireland); **1844** (manual of medical helminthology).

NUTRITIONAL AND METABOLIC DISORDERS

MANN, S. O., MASSON, F. M. & OXFORD, A. E. (1954). Effect of feeding aureomycin to calves upon the establishment of their normal rumen microflora and microfauna.—*Brit. J. Nutr.* **8**, 246-252. [Authors' summary modified.] **1707**

Aureomycin hydrochloride (40-60 mg.) was fed daily in gruel to 3 pairs of calves from about the 12th day to approx. the 5th, 8th and 12th week of age respectively, when they were killed with control calves of the same age. The ruminal and abomasal contents were then examined.

The aureomycin-fed calves had larger and less acid rumen contents than the controls, and reached a rumen pH (>6) suitable for intensive bacterial and protozoan action at a much earlier age.

Aureomycin could never be detected in the rumen, although it was indisputably present in the abomasum, usually at a concentration of 2-5 µg./g. ingesta. The antibiotic could not be detected in the caecum, and only traces were present in the omasum.

There was little difference between the aureomycin-fed and control calves in the final development of a typical rumen streptococcal population.

The authors concluded that aureomycin by mouth does not act directly on the rumen micro-organisms.

DICKINSON, C. D. & SCOTT, P. P. (1954). Effects of adding penicillin and aureomycin to the diet of cats.—*Brit. J. Nutr.* **8**, 380-385. [Authors' summary copied *verbatim*.] **1708**

The addition of penicillin and aureomycin to a diet containing 50% protein, mostly of animal origin, produced increased growth in kittens, accompanied by increased food intake and increased efficiency of food conversion, greater freedom from infection and an improvement in general health.

WAIBEL, P. E., ABBOTT, O. J., BAUMANN, C. A. & BIRD, H. R. (1954). Disappearance of the growth response of chicks to dietary antibiotics in an "old" environment. — *Poult.*

Sci. **33**, 1141-1146. [Authors' summary copied *verbatim*.] **1709**

During the period August 1950-May 1952, the addition of penicillin or aureomycin to nutritionally adequate diets consistently increased the growth of chicks. The percentage response to antibiotic appeared to be influenced by the type of diet fed, but attempts to improve the basal diet by various supplements failed to eliminate the response to the antibiotics.

From June 1952 to July 1953, these antibiotics no longer increased the growth rate of chicks fed good diets. This lack of response could have been due to a change in the microbial population associated with the decrease in the moisture in the room brought about by a change in cleaning practices; another possibility is that harmful bacteria had been eliminated through the long-continued use of antibiotics. These results are in harmony with the concept that antibiotics stimulate growth both by sparing required nutrients and by decreasing low-grade infections.

ABBOTT, O. J., BIRD, H. R. & CRAVENS, W. W. (1954). Effects of dietary arsanilic acid on chicks.—*Poult. Sci.* **33**, 1245-1253. [Authors' summary modified.] **1710**

Stimulation of growth similar to that obtained with penicillin, was obtained with arsanilic acid under various experimental conditions.

In one series of experiments conducted with practical rations in one particular environment and extending over a period of about one year, the growth response to arsanilic acid and to penicillin diminished and disappeared concurrently. In another series in which a purified ration was employed the dietary thiamine requirement was spared by both arsanilic acid and penicillin.

Arsanilic acid was tolerated at a level of 500 mg. per kg. ration. The lowest level which slightly suppressed growth was 1,000 mg. per kg. of ration which is more than ten times the level permitted by the Food and Drug Administration for use in commercial feeds. When

it was fed at levels of 1,500 mg. per kg. of ration or higher, symptoms similar to those of thiamine deficiency in chicks were observed. Weakness and paralysis occurred during the first week and head tremors, head retraction, the drawing of the head downward between the legs, and general incoordination occurred subsequently when such levels were used. Mortality was negligible when levels of arsanilic acid less than 2,000 mg. per kg. of ration were used. Excessive mortality occurred, mostly by the 9-12th day, when levels of 2,000 mg. or higher were used. Anorexia did not occur and slow growth was maintained when the level of arsanilic acid in the ration was increased to 2,500 mg. per kg.

COMBS, G. F., ROMOSER, G. L. & BISHOP, R. W. (1954). **Influence of arsanilic acid on dietary requirement of chicks for certain unidentified growth factors.**—*J. Nutr.* **53**, 511-522. [Authors' summary modified.] 1711

The authors reported two experiments, each involving 2,800 chicks, indicating that orally administered arsanilic acid increases the dietary requirement of chicks for the unidentified growth factor present in fish products and dried whey. The growth response of chicks to these unidentified factors was significantly greater in the presence of arsanilic acid.

Arsanilic acid supplementation significantly increased the growth rate of chicks fed complete practical type rations containing an antibiotic and sources of unidentified growth factors. No growth response was obtained from arsanilic acid supplementation when the rations contained no additional source of these unidentified factors.

SONENBERG, M., MONEY, W. L., DORANS, J. F., LUCAS, V. & BOURQUE, L. (1954). **The distribution of radioactivity in the tissues of the rat after the administration of radio-active growth hormone preparations.**—*Endocrinology*. **55**, 709-720. [Authors' summary modified.] 1712

The authors introduced an iodine-labelled pituitary preparation into rats by intracardial injection, and then studied radio-activity in various tissues and organs P.M. The radio-activity in the pancreas, adrenal, liver, spleen, thyroid, kidney and thymus was higher than that in the blood. Radio-activity in the pancreas appeared to be localized in the islets, and to be absent from the beta cells. There were not sufficient data to establish that the hormone accumulated within the epiphyses.

ROBERTS, R. S. (1954). **The nutritional properties of killed *Bacterium coli*.**—*Brit. J. Nutr.* **8**, 353-362. [Author's summary modified.] 1713

Cultures of *Bact. coli* in a chemical medium were centrifuged, and the organisms killed by heating at 80°C. for one hour. The killed organisms were mixed with cereals and fed to rats and chicks. Comparable groups received cereals and fish meal or standard diets. The animals were observed for 3 or 4 weeks and weighed each week.

The product was qualitatively equal to fish meal as a protein supplement for young rats, the optimum supplement in a diet of good barley meal and bran being of the order of 1-2%.

In chick diets the killed organisms with 1% fish solubles replaced the fish meal and the factors normally supplied to chicks as milk, liver meal and yeast.

The innocuity of the product was demonstrable in feeding tests with more than 600 animals. Alternative preparations containing culture fluid were demonstrably toxic.

The ability of *Bact. coli* protein to promote growth appeared to be greater than that of the conventional animal proteins; R. suggested that this and the beneficial effects of the feeding of antibiotics may be related phenomena.

These findings and other known properties of *Bact. coli* suggest that it may be used as a food organism.

KLINE, E. A., KASTELIC, J., ASHTON, G. C., HOMEYER, P. G., QUINN, L. & CATRON, D. V. (1954). **The effect on the growth performance of young pigs of adding cobalt, vitamin B₁₂ and antibiotics to semipurified rations.**—*J. Nutr.* **53**, 543-555. [Authors' summary modified.] 1714

The authors studied the effect of supplements of cobalt, vitamin B₁₂ and antibiotics on the growth of young pigs on semi-purified rations.

In the absence of antibiotics, the average effect of vitamin B₁₂ supplementation was to produce a significant increase in the rate of gain. The addition of 2.88 p.p.m. of cobalt to a ration with or without antibiotics and containing 0.1 p.p.m. of cobalt did not improve the growth performance of the pigs. The average effect of cobalt on the rate of gain was not significant.

Pigs receiving vitamin B₁₂ and cobalt made gains similar to those made by animals receiving cobalt only. Daily feed intakes and feed

efficiency were not affected by vitamin B₁₂ or cobalt supplementation.

When antibiotics were added to the rations the differences found significant in the absence of antibiotics disappeared. Antibiotics produced an apparent general increase in rate of gain as a result of improved feed utilization. There was little change in the daily feed intake.

Bacterial studies on faecal samples showed a marked increase in the fungi counts of the pigs fed antibiotic and a decrease in fungi counts of pigs receiving vitamin B₁₂ additions in both experiments. The counts were quite variable for other organisms.

There was no evidence that antibiotics inhibited intestinal synthesis of vitamin B₁₂. Animals receiving the basal ration and rations to which extra cobalt and high levels of antibiotics were added made better gains than did animals on similar rations which did not contain antibiotics.

MOCH, R. (1953). Versuche mit "T-Vitamin Goetsch" und Magermilch an dystrophischen Ferkeln. [The feeding of skim milk and a growth factor ("Vitamin T") to unthrifty pigs.]—*Berl. Münch. tierärztl. Wschr.* 66, 248-250. [English summary.] 1715

M. stated that unthrifty pigs showed a considerable increase in weight, as compared with controls after the administration, in skim milk, of a growth factor "tevit" containing "vitamin T" [*V.B.* 20, 1376], together with minerals and vitamin D.—H. BEHRENS.

TRAUTMAN, A. & SILBER, H. (1947). Die Beeinflussung des Fettansatzes beim Schwein durch Epiphysan. [Fattening of pigs with "epiphysan", a pineal body extract.]—*Tierärztl. Umsch.* 2, 1-3. 1716

In 2 female pigs treated, from the age of 10 weeks, twice weekly for 13 weeks with 5 ml. of a preparation stated to contain 0.1 g. of fresh cattle pineal gland per ml., there was no appreciable increase in the degree of fattening as compared with one similar untreated control animal. (The experiment terminated prematurely for lack of supplies.) This treatment did, however, inhibit the appearance of oestrus in these animals at the time of puberty. Oestrus could then be elicited by administration of pituitary gonadotrophin.

—G. P. MARSHALL.

TAYLOR, J. H. & GORDON, W. S. (1955). The effect of feeding a diet containing stilboestrol and thyroxine to growing pigs with special reference to the toxicity of stilboest-

rol.—*Vet. Rec.* 67, 48-52 & 58. [Authors' summary slightly modified.] 1717

A dietary supplement of stilboestrol (6 mg. per lb. of food) and thyroxine (0.3 mg. per lb. of food) was fed to 18 pigs with and without the addition of an antibiotic supplement, and these animals were compared with 18 control pigs. Under the conditions described:—The stilboestrol-and-thyroxine supplemented pigs showed no increase in growth rate or food conversion compared with their controls. The stilboestrol-and-thyroxine supplement did not increase the growth response obtained by antibiotic supplements. Five cases of toxicity, three of them fatal, occurred in the stilboestrol-and-thyroxine-fed animals while none occurred in the controls. The symptoms could be reproduced by feeding stilboestrol alone at 20 mg. per lb. of food.

The P.M. findings were in many ways similar to those reported in other species in cases of oestrogenic toxicity. The histological picture was very similar to that seen in the male mouse following continued oestrogen administration. A heat-stable oestrogenic substance was present in the carcasses of stilboestrol-fed pigs which was not found in control pigs.

JENSEN, R., CONNELL, W. E. & DEEM, A. W. (1954). Rumenitis and its relation to rate of change of ration and the proportion of concentrate in the ration of cattle. — *Amer. J. vet. Res.* 15, 425-428. [Authors' summary modified.] 1718

The incidence of inflammation of the rumen was higher in cattle which were transferred from a ration of roughage to a ration for fattening in 12 days than in those which made the same transfer in 30 days. Extensive acute inflammation was present in the rumen of cattle slaughtered after 35 days on a fattening diet; chronic inflammation was present in those slaughtered after 133 days on a fattening diet. Rumenitis was more frequently encountered in cattle fattened on a ration in which the proportion of concentrate to roughage was 3:1 than in those fattened on the same ingredients, but in which the proportion was 2:1 or lower.

BELASCO, I. J. (1954). Comparison of urea and protein meals as nitrogen sources for rumen microorganisms: urea utilization and cellulose digestion.—*J. Anim. Sci.* 13, 739-747. [Author's summary modified.] 1719

The authors compared, *in vitro*, urea with meals prepared from soya bean, cottonseed and maize gluten, as nitrogen sources promoting the digestion of cellulose by micro-organisms.

The utilization of urea in equal mixtures with various feed proteins was very efficient and its presence in such mixtures improved cellulose digestion above that observed with the feed proteins alone. This indicates that the availability of nitrogen from protein or non-protein sources is of great importance to efficient cellulose digestion.

An increase in the level of urea used as a sole source of nitrogen resulted in an increase in cellulose digestion as well as in the amount of urea utilized. With increasing quantities of urea, however, a point was reached where the concentration of free ammonia apparently inhibited both the utilization of urea and the digestion of cellulose.

POTTER, G. C. & KUMMEROW, F. A. (1954). **Chemical similarity and biological activity of the saponins isolated from alfalfa and soybeans.**—*Science*, **120**, 224-225. 1720

Infra-red absorption, melting point and specific rotation suggest that neutral saponins of lucerne (alfalfa) resemble those of soya bean in having a triterpene nucleus in the aglucon portion. The authors discussed the relation of saponin to depression of chick growth and to bloat in cattle.—P. H. HERBERT.

GRAINGER, R. B., O'DELL, B. L. & HOGAN, A. G. (1954). **Congenital malformations as related to deficiencies of riboflavin and vitamin B₁₂, source of protein, calcium to phosphorus ratio and skeletal phosphorus metabolism.**—*J. Nutr.* **54**, 33-48. [Authors' summary modified.] 1721

When female rats were fed a rachitogenic diet deficient in vitamin B₁₂ and riboflavin, and possibly also in folic acid, there was a high incidence of hydrocephalus, ocular defects and skeletal abnormalities in their offspring. The incidence of the malformations was greatly reduced by adding to the diet of the dams the known vitamins required by the rat. The addition of these vitamins to a diet in which the dietary protein was of soya bean origin gave nearly complete protection. The omission of vitamin B₁₂ resulted in hydrocephalus, eye defects and an increased incidence of bone defects. The omission of riboflavin had no effect on the incidence of hydrocephalus or eye defects but increased skeletal abnormalities. The omission of both gave a still higher incidence of skeletal abnormalities. A high Ca/P ratio also increased skeletal defects.

The alkaline phosphatase activity in the tibiae of riboflavin- and vitamin B₁₂-deficient new-born was lower than normal. The rate of

phosphorus deposition in the tibiae of vitamin B₁₂-depleted offspring as measured by specific activities after P³² administration was also decreased. These facts give an indication of the cause of the high incidence of skeletal abnormalities in cases of deficiency in riboflavin or vitamin B₁₂.

ANON. (1952). **Carbohydrate metabolism. A symposium of the clinical and biochemical aspects of carbohydrate utilization in health and disease.** [Edited by: NAJJAR, V. A.] pp. 134. Baltimore: The Johns Hopkins Press; (London: Geoffrey Cumberlege, Oxford University Press.) \$4. 1722

The newer knowledge of eight aspects of the subject was presented for discussion concerning, *e.g.* the enzymatic synthesis and molecular configuration of glycogen; factors affecting liver and muscle phosphorylase; glycogen disease; pituitary inhibition of glucose uptake by the muscle; spontaneous hypoglycaemia: clinical and metabolic studies; the therapeutic implications of disturbances in water and electrolyte metabolism in diabetic acidosis. These are followed by a summary and a subject index.

—E. MARSH JONES.

GARTON, G. A. (1954). **The component fatty acids of bovine mammary-gland fat.**—*J. Sci. Fd Agric.* **5**, 247-251. [Author's summary slightly modified.] 1723

G. determined the component acids present in the fat of the secretory tissue of the udder of a lactating and of a non-lactating cow. The fat of the lactating gland contained about half as much of the lower saturated acids (butyric-capric) as a typical milk-fat, with a compensating increase in the proportions of stearic and palmitic acid; all the minor unsaturated acids of milk fat were detected. Although the fat of the non-lactating gland contained small amounts of the minor saturated and unsaturated acids characteristic of milk fat, it differed from lactating-gland fat and also from bovine depot-fat in the relative amounts of the major component acids; palmitic acid comprised more than 40% of the total acids of this fat.

FOSTER, A. H. (1955). **An emaciation syndrome in Malayan cattle.**—*Vet. Rec.* **67**, 167-169. [Author's summary modified.] 1724

F. described an emaciation syndrome affecting crossbred zebu cattle in Malaya and gave an account of the P.M. findings. He discussed the similarity of aetiology, clinical syndrome and morbid anatomy to dietetic diffuse hepatic

fibrosis described in rats, dogs and human beings.

It appeared to be a protein deficiency.

LOEWE, L., GOLDNER, M. G., RAPOPORT, S. M. & STERN, I. (1954). **Failure of protein to protect against cholesterol atherogenesis in underfed rabbits.** — *Proc. Soc. exp. Biol., N.Y.* **87**, 360-362. [Authors' summary modified.] **1725**

The authors studied the effect of protein on development of experimental atherosclerosis in underfed rabbits with supplementary cholesterol. Those on a limited intake of standard laboratory food lost approx. one-fourth of their body wt. At P.M. examination a marked degree of atherosclerosis was noted and there was an increase in lipoids and lipoproteins. Those on a limited intake of a relatively high protein diet, which lost equivalent amounts of wt., developed approx. the same degree of atherosclerosis and of increase in blood lipoids and lipoproteins. It was concluded that protein played no part in the development of atherosclerosis under the conditions of the experiment.

BOYCE, W. H., CARVEY, F. K. & NORFLEET, C. M., JR. (1954). **Proteins and other bio-colloids of urine in health and in calculous disease. I. Electrophoretic studies at pH 4.5 and 8.6 of those components soluble in molar sodium chloride.** — *J. clin. Invest.* **33**, 1287-1297. [Authors' summary slightly modified.] **1726**

The total quantity of proteins and other particles of colloidal size in the urine of human patients with calculi is 3 to 13 times greater than that in normal urine. Electrophoretic studies of those components soluble in buffers of pH 4.5 and 8.6 demonstrated consistent variations in the proteins from the urine of patients with calculi as compared with normal urine. These variations were most apparent in the "alpha" fractions.

PATRICK, H. & SCHWEITZER, G. K. (1954). **Factors associated with the movement of calcium from the food to the bones of chicks.** — *Poult. Sci.* **33**, 1199-1201. [Authors' summary modified.] **1727**

An organic factor besides vitamin D is associated with bone mineralization. This factor is found in milk albumin and casein, is water soluble, and can be destroyed by dialysis. The Ca^{45} bone mineralization values decrease when the ration contains over 1% calcium.

O'ROURKE, W. F., BIRD, H. R., PHILLIPS, P. H. & CRAVENS, W. W. (1954). **The effect**

of low phosphorus rations on egg production and hatchability. — *Poult. Sci.* **33**, 1117-1122. [Authors' summary modified.] **1728**

A basal ration containing 0.19% phosphorus failed to support normal egg production and hatchability, but when it was supplemented with $\text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$ to contain 0.30% phosphorus (0.18% non-phytin and 0.12% phytin phosphorus) normal production and hatchability were maintained. The phosphorus requirement of laying pullets appears to be considerably lower than was supposed.

AWAD, F. I. (1955). **Pine (cobalt deficiency) in lambs.** — *Vet. Rec.* **67**, 59-60. [Author's summary slightly modified.] **1729**

Lambs kept on a basal ration composed of flaked maize, crushed oats and hay showed symptoms of cobalt deficiency, but made immediate response when cobalt chloride was administered at the rate of 5 mg. per lamb as a drench for 14 consecutive days. Lambs given the same basal ration with a supplement of 5 mg. cobalt twice weekly or a supplement of faeces from normal sheep, gained weight normally and showed no symptoms of deficiency.

An acute case of pining superimposed upon nematode infestation was recorded.

SOKOLOVA, L. M. (1954). [Importance of cobalt for farm animals.] — *Veterinariya, Moscow.* **31**, No. 5. pp. 49-53. [In Russian.] **1730**

S. gave a general account of cobalt deficiency, in cattle. Vitamin B_{12} , containing 4.5% of cobalt, appeared to be the most effective substance for treatment. He stated that leaves of aspen, willows and certain clovers are also rich in cobalt. — F. A. ABBEY.

BLAXTER, K. L., ROOK, J. A. F. & MACDONALD, A. M. (1954). **Experimental magnesium deficiency in calves. I. Clinical and pathological observations.** — *J. comp. Path.* **64**, 157-175. **1731**

BLAXTER, K. L. & ROOK, J. A. F. (1954). **Experimental magnesium deficiency in calves. II. The metabolism of calcium, magnesium and nitrogen and magnesium requirements.** — *Ibid.* 176-186. [Authors' summaries modified.] **1732**

I. The authors produced magnesium deficiency in calves by feeding them an artificial diet containing only 0.5 mg./100 ml. but adequate in all other respects.

They described the clinical signs and the gross and histological pathology of the disease.

The disease was associated with a fall in the blood serum Mg to values below 0.5

mg./100 ml., and it was shown that to maintain a normal serum value of 2.1 mg./100 ml. a dietary concentration of Mg of 14 mg./100 ml. was necessary.

There was no detectable loss of Mg from the soft tissues of the body, but bone Mg was depleted to the extent of 30%.

They discussed the results in relation to the so-called "milk syndrome". It appears that uncomplicated Mg deficiency in calves aged 50 to 120 days is not associated with the pathological calcification of the endocardium and vascular system observed in the former disease.

II. Continuous metabolic studies were made with calves given rations containing different amounts of magnesium.

Studies of the cumulative retention of Mg showed that in calves given normal amounts of Mg, retention could be predicted from simultaneous data on calcium and nitrogen retention.

Mg deficiency had no effect on Ca metabolism or N metabolism.

It was shown that it was necessary to deplete the calf of 30% of its total body Mg to cause tetanic convulsions.

Diarrhoea accelerated the Mg loss, but Ca and N retention were similarly depressed.

It was calculated that at rates of gain of 1 lb./day the calf requires a dietary conc. of 16 to 18 mg. of Mg./100 ml. to ensure 90% saturation of its capabilities to retain Mg from a standard amount of diet.

The maintenance requirement for Mg was met by an intake of 150 to 180 mg. of Mg./day, equiv. to a dietary conc. of approx. 8 mg./100 ml. or a requirement per kg. of body wt. of approx. 40 mg.

The percentage retention of dietary Mg was low, large quantities being lost in the faeces. The loss in the urine was always very small.

The authors discussed the results in relation to Mg requirements.

MCSHERRY, B. J. & GRINYER, I. (1954). Disturbances in acid-base balance and electrolyte in calf diarrhoea and their treatment. A report of eighteen cases.—*Amer. J. vet. Res.* 15, 535-541. 1733

The authors determined the pH and the bicarbonate, chloride, Na, Ca, K, and P content of the serum, and the sugar content of the whole blood, of 18 calves with diarrhoea. In most of the calves there was moderate to severe acidosis. They claimed good results for the treatment of diarrhoea by a single i/p inj. of a solution containing the chlorides of sodium, calcium and magnesium, sodium acetate and citrate, and potassium acetate. If the response

of the calf to this injection was not satisfactory, a second inj. was given the next day. This treatment was often combined with antibiotic therapy.—R.M.

FITCH, L. W. N. (1954). Osteodystrophic diseases of sheep in New Zealand. II — "Bowie" or "bent-leg". — *N.Z. vet. J.* 2, 118-127. [Author's summary modified.] 1734

F. described osteodystrophic disease of unweaned lambs and recorded some observations on its incidence and pathology. It is known locally as "bowie" from its most striking clinical feature—a "bowing" or bandiness of the front legs. The condition is liable to be confused clinically with rickets, but can be distinguished by its seasonal incidence and by the following histological features:—(1) Provisional calcification of cartilage in growing bones is not defective as in rickets, but, if anything, tends to be excessive. (2) A typical rachitic metaphysis characterized by the presence of uncalcified osteoid is not present as in rickets, but a different type of metaphyseal lesion devoid of osteoid is commonly seen.

JACOBSON, N. L., ALLEN, R. S., BLAKE, J. T. & HOMEYER, P. G. (1954). The effect of method of administration on the absorption and storage of vitamin A by dairy calves.—*J. Nutr.* 54, 143-153. [Authors' summary modified.] 1735

A natural ester vitamin A concentrate was fed by various methods to young dairy calves, previously depleted of vitamin A reserves, to determine the relative efficiency of absorption and storage of the vitamin given in different ways. Vitamin A in oil, or in oil together with an emulsifying agent (Tween 80) was administered in milk by nipple feeder and by capsule.

The absorption and storage of the vitamin, as measured by blood plasma levels and by the time taken for the blood plasma vitamin A level to fall to 5 µg. per 100 ml. subsequent to vitamin A supplementation, were much greater from an aqueous dispersion than from an oily soln. There were indications that the administration of the vitamin in milk by nipple feeder resulted in more efficient utilization than administration by capsule. The point of deposition of a vitamin A supplement in the stomach of the dairy calf appeared to have a greater effect upon the rate of absorption than upon efficiency of utilization of this vitamin.

LAMMING, G. E., WOOLLAM, D. H. M. & MILLEN, J. W. (1954). Hydrocephalus in

young rabbits associated with maternal vitamin A deficiency.—*Brit. J. Nutr.* **8**, 363-368. [Authors' summary modified.] **1736**

Young rabbits born to dams with incipient vitamin A deficiency developed convulsions, paralysis and head retraction 21-74 days after birth. A high proportion (26 out of 35) of the vitamin A-deficient young had hydrocephalus with stenosis of the cerebral aqueduct. The authors discussed the possibility that the increased cerebrospinal-fluid pressure was the cause of constriction of the optic nerves which was observed in these animals. No abnormalities were seen in young born to dams receiving the same diet plus adequate vitamin A.

They discussed these findings in relation to reports of vitamin A deficiency in growing farm animals.

SAFFORD, J. W., SWINGLE, K. F. & MARSH, H. (1954). **Experimental tocopherol deficiency in young calves.**—*Amer. J. vet. Res.* **15**, 373-384. [Authors' summary modified.] **1737**

Muscular dystrophy developed in 4 calves maintained on a synthetic milk, deficient in tocopherol. Two calves maintained on the same milk but also given 148 mg. α -tocopherol acetate daily did not develop dystrophy. The authors described in detail the clinical features of the condition. The electrocardiogram differed from that of normal calves in that the P-R and Q-T intervals were longer.

MULDER, A. G., GATZ, A. J. & TIGERMAN, B. (1954). **Phosphate and glycogen determinations in the hearts of vitamin E-deficient rabbits.** — *Amer. J. Physiol.* **179**, 246-248. [Abst. from authors' summary.] **1738**

Tissue analysis of the hearts of vitamin E-deficient rabbits revealed a marked reduction in the creatine phosphate fraction (av. 6.1 mg.% in controls and 0.9 mg.% in the test animals). The reduction was greatest in cases in which the onset of dystrophy was rapid and accompanied by rapid loss of body weight. There was no significant change in the inorganic phosphate and adenosine polyphosphate fractions and no change in the glycogen content.

GREGORY, M. E. (1954) **The microbiological assay of vitamin B₁₂ in the milk of different animal species.** — *Brit. J. Nutr.* **8**, 340-347. [Author's summary modified.] **1739**

Samples of colostrum from cows and goats, and of milk from cows, goats, human beings, sheep, pigs and rats were assayed for "vitamin B₁₂" by three different assay organisms (*Lactobacillus leichmannii*, *Bacterium coli* and *Ochro-*

monas malhamensis). Various methods for preparing the milk samples for assay were compared. The "vitamin B₁₂" activity of milk was found to be due almost entirely to cyanocobalamin. In all the species of milk tested the cyanocobalamin was present in a bound form.

DRYDEN, L. P., HARTMAN, A. M. & CARY, C. A. (1954). **Influence of vitamin B₁₂ upon vaginal patency in the rat.**—*Proc. Soc. exp. Biol., N.Y.* **87**, 195-197. [Authors' summary modified.] **1740**

Among young female rats suckled by dams on a vitamin B₁₂-deficient diet the onset of sexual maturity as measured by vaginal patency, was found to be delayed in the vitamin B₁₂-deficient animals as compared to vitamin B₁₂-supplemented litter-mates. No such differences were observed when the dams were fed the vitamin during lactation. The nature of the carbohydrates and protein in the ration was found to have an effect on the differences observed.

DESSAU, F. I., LIPCHUCK, L. & KLEIN, S. (1954). **Heart lesions in mice given diets deficient in vitamins E and K.** — *Proc. Soc. exp. Biol. N.Y.* **87**, 522-524. **1741**

In a study of the aetiology of lesions of the heart muscles which have been found to occur in rats and mice fed purified diets supplemented with sulphaguanidine, the authors found that combined deficiency of vitamins K and E produced these lesions in mice.—F.E.W.

STURKIE, P. D., SINGSEN, E. P., MATTERSON, L. D., KOZEFF, A. & JUNGHERR, E. L. (1954). **The effects of dietary deficiencies of vitamin E and the B complex vitamins on the electrocardiogram of chickens.**—*Amer. J. vet. Res.* **15**, 457-462. [Authors' summary modified.] **1742**

Adult hens were fed diets deficient in vitamin E, or the vitamin B complex, or in both vitamins. Vitamin E deficiency alone did not affect egg production or mortality appreciably, but it did produce abnormal electrocardiograms: the principal abnormalities were deviation of the electrical axis to the right, premature ventricular systole, sinus arrhythmia, and elevated S-T segments.

Combined deficiency of vitamins E and B caused slightly higher mortality, but did not affect egg production. The incidence of heart disorders was no greater than in deficiency of one or other of the vitamins, but the type of anomalies differed: deviation of the electrical axis to the right was common.

Sinus arrhythmia is not by itself abnormal in some mammals and in the pigeon, but it rarely occurs in the normal fowl.

SINCLAIR, D. P. & ANDREWS, E. D. (1954). **Goitre in new-born lambs.**—*N.Z. vet. J.* **2**, 72-79. [Authors' summary modified.] **1743**

An account of a severe outbreak of goitre accompanied by heavy neonatal mortality in lambs born to kale-fed ewes. A few cases of moderate goitre were observed among lambs from pasture-fed ewes, but these did not appear to be associated with unusual mortality.

In the following year, a similar feeding programme in which was incorporated an iodine-prophylactic trial gave the following results:—In kale-fed ewes, foetal goitre was associated with a significant increase in the duration of pregnancy. While moderately-enlarged thyroid glands were found in some lambs from pasture-fed ewes, the incidence of goitre was greatly increased when ewes were fed kale. In both pasture and kale-fed groups, goitre was prevented and the iodine status of lamb thyroid glands raised by dosing pregnant ewes with potassium iodide each at the rate of 140 mg./week for 6 weeks. In contrast to experience in the previous year, goitre in lambs from kale-fed ewes was not accompanied by a high mortality rate. Goitre in new-born lambs did not affect their subsequent rates of growth between birth and weaning.

TARVER, W. J. (1955). **Ovine pregnancy toxæmia. Its probable cause and a logical treatment.**—*Brit. vet. J.* **111**, 68-72. [Author's summary modified.] **1744**

T. discussed the aetiology of ovine pregnancy toxæmia and the actions and uses of methionine. He gave details of field methods of diagnosis of pregnancy toxæmia and of its treatment with methionine on five farms. There was success on two farms and partial success on two more but these cases were complicated by (a) a cautious owner and (b) a careless owner. In the one case of complete failure there was co-existent liver damage due to fasciola. Death of the foetus appeared not to affect the action of methionine though longer treatment was necessary.

FERGUSON, N. L. (1954). **Changes in the liver fat of the pregnant sheep at different levels of nutrition and during starvation.**—*Brit. J. Nutr.* **8**, 269-280. [Author's summary modified.] **1745**

F. determined total liver fat in a series of 44 'half-bred' (Border Leicester × Cheviot)

pregnant ewes maintained on high and low levels of nutrition and following short periods of starvation.

Between the 138th and 143rd days of pregnancy ewes which were well nourished during the period of gestation had the same amount of liver fat (8.8%) as did non-pregnant animals, but at the 100th day there was slightly less.

Starvation imposed on well-fed ewes at the 138th day of pregnancy resulted in a pronounced rise in liver fat to a level which changed little during the fasting period of 6 days.

Reduction of the plane of nutrition at the 100th day of pregnancy from a high level to near starvation level, resulted in an increase in the fat content of the liver to 26.7% between the 137th and 140th days of pregnancy.

When, at the 138th day of pregnancy, ewes that had been on a low plane of nutrition since the 100th day were subjected to starvation, there was an indication of a slight fall in liver fat as starvation progressed. In relation to these findings F. discussed pregnancy toxæmia, which occurred in three unstarved ewes on the low-plane diet.

SCHNAUTZ, J. O. (1954). **Postparturient myorrhæxis in cattle.**—*N. Amer. Vet.* **35**, 191-193. **1746**

The condition, in association with milk fever, has been often observed in Oregon and has been reported from other states and in Canada. Mild cases recover spontaneously; more severe ones show no improvement over many months. A relaxed Achilles tendon is pathognomonic—and a tendency for the plantar aspect of the metatarsus to touch the ground. The muscles behind the tibia are found ruptured at their broadest part; and there is a copious sero-sanguineous exudation. Rest and isolation are important in treatment of mild cases.—F. L. M. DAWSON.

MOODIE, E. W., MARR, A. & ROBERTSON, A. (1955). **Serum calcium and magnesium and plasma phosphate levels in normal parturient cows.**—*J. comp. Path.* **65**, 20-36. [Authors' summary modified.] **1747**

An account of a detailed study of the changes in serum calcium and magnesium and in plasma inorganic, total acid soluble, lipid and total phosphates in 32 normal parturient cows. Seven of these cows were having their first calf, eight their second, nine their third, and eight their fourth or subsequent calf.

Serum calcium levels fell at or within two days of calving to reach their lowest point about

one day after calving; the fall was greater in older cows and their lowest levels were significantly lower than those of cows in the younger group. Serum magnesium levels increased to reach their highest point about one day after calving; the rise was greater in older cows and the levels reached by older cows were significantly higher than those of cows in the younger group. Inorganic, total acid soluble and total phosphates all decreased during the 24 hours before calving to reach their lowest point at calving; the fall was greater in older cows and their lowest levels were significantly

lower than those of cows in the younger group. Calving was followed by an immediate rise in these plasma phosphate levels; the rise was more rapid in the younger group of cows. There was a slight secondary fall in these phosphate fractions about two days after calving and then a gradual return to pre-partum levels. Lipoid phosphate showed only slight alteration at parturition and there were no differences in lipoid phosphate levels between the groups.

The authors discussed the relation of the blood changes in normal parturient cows to those which occur in milk fever.

See also absts. 1643 (toxoplasmosis in vitamin A deficient rats); 1693 (heat treatment of swill to prevent disease in pigs).

DISEASES, GENERAL

BOSWORTH, T. J. (1954). **Control of livestock diseases in Britain: some reflections on the present situation.** — *Proc. R. Soc. Med.* 47, 23-26. 1748

B. reviewed the present position with regard to animal disease in Great Britain. Concerning research he stated his view that the Agricultural Research Council is overburdened, and that the investigation of animal health problems should be entrusted to a veterinary body comparable to the Medical Research Council.—A.S.

BEATON, W. G. (1954). **Le rôle des animaux sauvages dans la transmission des maladies animales contagieuses autre que la rage. [Wild animals and the transmission of diseases other than rabies.]**—*Bull. Off. int. Epiz.* 42, May, pp. 223-235. [English summary.] 1749

B. defined the terms used in his report and grouped transmissible animal diseases under three main heads, according to the causal agents, viz. bacterial, protozoan and virus diseases. The different modes of transmission and the main characteristics of each group were described.

Owing to lack of definite knowledge it was assumed that the method of infection and the general course of specific diseases in wild animals was the same as in domestic animals. It was still a matter for conjecture whether diseases originated in the wild or in the domestic animal and the author emphasized the necessity for further research on the subject to fill the existing lacunae and to establish the exact relationship between wild and domestic animals in the transmission of disease.

—T. E. GATT RUTTER.

GALUZO, I. G. & HEMENTSOVA, M. M. (1954). **[A theory suggesting the spread of infectious diseases to farm animals from natural sources.]**—*Veterinariya, Moscow*. 31, No. 8, pp. 26-29. [In Russian.] 1750

The authors stated that in Veterinary Schools little attention is paid to the infectious diseases of wild animals. Yet, considering the frequent occasions for contact between wild and domestic animals, the former must be considered an important reservoir. They stated that the most important diseases in this connexion are: pasteurellosis, tularaemia; necrobacillosis, listerellosis and infection with *Erysipelothrix*; foot and mouth disease, dog distemper, rabies and Aujeszky's disease. Brucellosis has been observed in Siberian marmots and in rats. The authors suggested that it would be interesting to study the relation between the fluctuating size of populations of wild animals and the incidence of infection in domestic animals.—A. MAYR-HARTING.

VITTOZ, R. (1954). **Considérations pratiques sur le rôle des animaux sauvages dans la transmission des maladies contagieuses et la prophylaxie de celles-ci dans le Sud-Est Asiatique. [The role of wild animals in spread of diseases of domestic animals in South-East Asia.]**—*Bull. Off. int. Epiz.* 42, May, pp. 206-212. 1751

A general note on rinderpest, F. & M. disease and surra in wild animals in S.E. Asia, and on international co-operation to prevent their spread.—A.S.

MIKA, L. A., GOODLOW, R. J., VICTOR, J. & BRAUN, W. (1954). **Studies on mixed infections. I. Brucellosis and Q fever.** — *Proc.*

Soc. exp. Biol., N.Y. **87**, 500-507. [Authors' summary slightly modified.] **1752**

G. pigs exposed simultaneously to *Br. suis* and sublethal doses of *R. burneti* developed both brucellosis and Q fever although they were less severely ill than animals infected with *Br. suis* alone. G. pigs infected 11 or more days previously with *Br. suis* showed a significant resistance to lethal doses of *R. burneti*. This "interference" could not be explained on the basis of demonstrable immunological factors.

McGEE, W. R. (1954). Disease problems in foals.—*Vet. Med.* **49**, 311-313. **1753**

The author discussed the diagnosis and treatment of isohaemolytic jaundice and rupture of the bladder in foals.—A.S.

FINCHER, M. G. (1955). Diseases of calves.—*Vet. Ext. Quart. Univ. Pa.* No 137, pp. 25-34. [Abst. from author's summary.] **1754**

F. gave a brief account of some incurable hereditary conditions. He discussed also bloat in calves and nutritional diseases with emphasis on prevention, also the aetiology and various methods of prevention and treatment of calf scours and of pneumonia in calves.

RAMAKRISHNAN, M. & ANANTHAPADMANABHAN, K. A preliminary note on the investigation into bovine paralysis in South Kanara district, Madras State.—*Indian vet. J.* **29**, 291-303. **1755**

An account of preliminary investigations into a form of paralysis which has been observed for many years in cattle in Madras. There have been numerous theories as to its aetiology, but the authors eliminated virus and bacterial infections and plant poisoning as causes. Microfilariae were demonstrable in the blood of 3 out of 50 affected cattle, and 11 out of 25 serum samples reacted to the c.f. test for trypanosomiasis.—R. N. MOHAN.

DOYLE, L. P., DUNNE, H. W., OLDHAM, G. R. & LIDIKAY, H. A. (1954). Symposium on swine diseases.—*Vet. Med.* **48**, 345-349. Discussion: pp. 351-352. **1756**

An account of a meeting at which the four contributors presented short papers on arthritis, vesicular exanthema, enteric disturbances and nutritional problems, respectively.—A.S.

AREND, I & GRIEM, W. (1954). Die Veränderung des Natrium-, Kalium-, Magnesium- und Kalziumgehaltes der Muskulatur bei Herztodschweinen. [Changes in the sodium, potassium, magnesium and calcium content

of skeletal muscle from pigs with fatal syncope.]—*Mh. VetMed.* **9**, 252-254. **1757**

Heart and skeletal muscles of nine pigs which had died from fatal syncope were found to have an increased sodium but decreased potassium and magnesium contents. These changes were in direct proportion to the severity of the lesions.—W. G. SILLER.

FAHEY, J. E. & CRAWLEY, J. F. (1954). Les maladies respiratoires des volailles au Canada. [Respiratory diseases of poultry in Canada.]—*Rev. canad. Biol.* **13**, 171-188. [English summary.] **1758**

The principal respiratory diseases of poultry in Canada during 1952-53 were Newcastle disease, infectious bronchitis, and "chronic respiratory disease". The incidence of the first two, as determined by serological surveys, was 11.8% and 75% of all respiratory diseases, respectively. The incidence of chronic respiratory disease could not be accurately determined, but it appears to be becoming increasingly important.—R. GWATKIN.

PRIER, J. E. [Assistant Professor of Bacteriology, College of Medicine, State University of New York, Syracuse, New York.] (1953). Turkey diseases. pp. 151. Danville, Ill.: Interstate Publishers. 20s. **1759**

This little book, written primarily for the American reader, is intended to be an introduction to turkey diseases for the farmer and veterinary student.

It is divided into eight chapters and, whilst much of the subject matter is readily classified on this basis, it is difficult to understand the classification of some diseases, e.g. avian leucosis in the chapter—"Diseases of the digestive system", and mechanical injuries of the digestive tract in the "Miscellaneous disease" chapter.

There is a lack of uniformity in presenting the details of the various diseases not altogether commensurate with their relative importance. Nutritional diseases, coccidiosis, and moniliasis have been dealt with too briefly whilst diseases of mismanagement, e.g. "chilling" have been overlooked. Newcastle disease is described in considerable detail as it occurs in the U.S.A., but the acute Asiatic form of the disease is not described.

There are numerous illustrations, many of which are excellent, but many are so indistinct as to be of no value, whilst some are superfluous.—F. T. W. JORDAN.

RUST, J. H., TRUM, B. F. & KUHN, U. S. G. (1954). Physiological aberrations following

total body irradiation of domestic animals with large doses of gamma rays.—*Vet. Med.* **49**, 318-320 & 352. **1760**

The authors discussed the physiological changes seen in mules exposed to whole-body irradiation. These included oedema of the brain, gliosis, increase of blood-clotting time, the disappearance of leucocytes, changes of cardiac rhythm, interference with the oestrous cycle, and marked changes in the respiratory quotient.—A.S.

AKTAN, F. (1954). Die Leberfunktionsprüfung mit Bromthalein beim Pferde. [A bromsulphalein liver-function test in horses.] — *Mh. VetMed.* **9**, 97-101. **1761**

Results suggested that this test is of clinical value in cases of liver disturbance. Blood samples are taken 25 min. after injection.

—C. W. OTTAWAY.

LÜBKE, A. (1954). Die pathologische Diagnose der Herz- und Kreislaufinsuffizienz. [Pathological diagnosis of cardiac and circulatory insufficiency.] — *Mh. Tierheilk.* **6**, 141-154. **1762**

A general discussion on the pathogenesis of cardiac and circulatory insufficiency and its effect on various organs in relation to the macroscopic and histological findings in some of the more common animal diseases which are associated with circulatory failure.—W. G. SILLER.

DOUGLAS, S. W. (1955). Some observations on the use of myelography for the demonstration of protrusion of the intervertebral disc in the dog.—*Vet. Rec.* **67**, 75-78. [Author's summary modified.] **1763**

Myelography, employing either of the organic iodine compounds, "myodil" or "neohydriol fluid" as the radio-opaque medium, was performed in 30 clinical cases of prolapse of an intervertebral disc in dogs. Protrusion of an intervertebral disc was successfully shown

in 21 cases, but in some dogs additional prolapses which had been missed were demonstrable at P.M. examination or during surgical operation.

Myelography was of no value for diagnosis in four cases of progressive ascending paralysis. It was considered that five other failures to indicate an existing lesion were due to faulty technique and could probably have been prevented. D. emphasized that there are certain risks involved in the procedure and that deep barbiturate anaesthesia is contra-indicated for performing myelography.

HOUCK, C. R. (1954). Problems in maintenance of chronic bilaterally nephrectomized dog.—*Amer. J. Physiol.* **176**, 175-182. **1764**

H. maintained 15 bilaterally nephrectomized dogs for periods from 5-111 days by feeding them a low salt diet by stomach tube, and maintaining hydration by peritoneal dialysis, 3 times daily for the first week, and twice daily in subsequent weeks. The technique of peritoneal dialysis was to introduce 1.5-2 litres of electrolyte i/p and to drain off after 2 hours. Dogs so treated could live a month or more without any marked abnormality in plasma electrolytes or blood volume. All the dogs developed anaemia, and those which survived the first week developed hypertension.—A.S.

NABARRO, J. D. N. (1954). The use of corticotrophin gel as a test of adrenal cortical function. — *Lancet.* **267**, 1101-1104. [Author's summary modified.] **1765**

N. studied the response of the adrenal cortex to corticotrophin gel in 48 human patients, and described its use as a diagnostic test of adrenal cortical function.

He used changes in the absolute eosinophile count, the sodium/potassium ratio in the urine, and excretion of 17-ketosteroids to detect adrenal cortical response in individuals given corticotrophin.

POISONS AND POISONING

ROSE, C. L., HARRIS, P. N. & CHEN, K. K. (1954). Effect of cyanide poisoning on the central nervous system of rats and dogs. — *Proc. Soc. exp. Biol., N.Y.* **87**, 632-636. [Authors' summary slightly modified.] **1766**

Prolonged cyanide poisoning in rats may cause cerebral changes in 10% of the animals. Daily injection of potassium thiocyanate similarly results in brain injury in 10% of rats.

In the rat continuous administration of sodium nitrite does not produce lesions in the

c.n.s.

In dogs cyanide poisoning with or without the nitrite-thiosulphate therapy does not induce abnormal behaviour. When they die from the poisoning, the brain is usually normal in appearance.

ROSENFELD, I. & BEATH, O. A. (1954). Effect of selenium on reproduction in rats.—*Proc. Soc. exp. Biol., N.Y.* **87**, 295-297. [Authors' summary modified.] **1767**

The inclusion of low concentrations (1.5 and 2.5 p.p.m.) of selenium in their drinking water over two generations had no effect on the litter size of rats though 2.5 p.p.m. reduced the number of young reared by the second generation of mothers. At 7.5 p.p.m. selenium prevented reproduction in females but did not affect the fertility of males.

HANSEL, W., OLAFSON, P. & MCENTEE, K. (1955). **The isolation and identification of the causative agent of bovine hyperkeratosis (X-disease) from a processed wheat concentrate.**—*Cornell. Vet.* 45, 94-101. [Authors' summary modified.] 1768

The authors isolated a highly chlorinated naphthalene, the causative agent of X-disease (hyperkeratosis) in cattle, from a batch of bread crumbs collected from beneath the slicing and wrapping machinery in a particular bakery. The isolated material was identified by ultra-violet and infra-red absorption techniques and by microanalyses. The contamination of the bread must have occurred during the slicing and wrapping process; the source was not found. The authors had previously isolated the agent from "a processed wheat concentrate" [*V.B.* 21, 3327 & 22, 518] presumably made from such material.—F.E.W.

FUJIMOTO, Y. & TAJIMA, M. (1953). **Pathological studies on urea poisoning.**—*Jap. J. vet. Sci.* 15, 125-132. [In Japanese. English summary pp. 133-134.] 1769

In a study of its toxicity, urea was administered to 5 goats and 10 rabbits. Four of the goats died within 30 min. after drinking water containing the equivalent of 50 g. urea per goat. Two of the rabbits died 6 and 10 hours after s/c inj. of 6 and 7 g./kg. respectively, and a third 22 hours after oral dosage with 10 g./kg. Lesions included acute catarrhal gastro-enteritis and bronchitis, nephrosis, peribronchial and intra-alveolar haemorrhages, and congestion, haemorrhages, and degenerative changes in the c.n.s. An overdose of urea is converted into ammonia in the stomach.

—KOGI SAITO.

HARRIS, L. E., HARRIS, J. R., MANGELSON, F. L., GREENWOOD, D. A., BIDDULPH, C., BINNS, W. & MINER, M. L. (1953). **Effect of feeding DDT-treated alfalfa hay to swine and of feeding the swine tissues to rats.**—*J. Nutr.* 51, 491-505. 1770

Newly-weaned pigs fed up to 33% lucerne (alfalfa) bearing 23 p.p.m. D.D.T. residue (dry basis) made normal weight gains. P.M. examination revealed no lesions in their liver

and kidneys. Similarly, fat and flesh from these pigs, containing 2.2-5.3 p.p.m. of D.D.T. failed to affect growth or to produce pathological changes when fed to young rats for 14 weeks.—G. P. MARSHALL.

COWAN, R. L., BRATZLER, J. W. & SWIFT, R. W. (1953). **Grass silage preservation with sodium bisulfite.**—*Progr. Rep. Pa agric. Exp. Sta.* No. 99, pp. 10. 1771

A method for preparation of silage from unwilted forage by the addition of from 8 to 10 lb. of sodium bisulphite per ton of forage has been tried experimentally and in the field. It is claimed that this process reduces loss of nutrients, particularly carotene, and improves the colour, odour, digestibility and palatability of the silage. Warning is given of irritant effects produced on the nasal mucous membranes of men working inside the silo by the sulphur dioxide which is evolved from the sodium bisulphite.

There is no mention of any toxic effect on cattle eating such silage.—M.C.

KAMEL, S. H. (1955). **Some observations on the effects of environment on mice dosed with dinitro-ortho-cresol.**—*Brit. vet. J.* 111, 34-37. [Author's summary modified.] 1772

Increases of temperature and relative humidity increased the toxic activity of dinitro-ortho-cresol (DNOC) on mice not previously given time to accustom themselves to the new conditions. K. cited this to support the view of certain workers who had described losses in animals and men following crop-spraying with DNOC, particularly in hot weather.

The characteristic symptoms of DNOC poisoning in human beings are excessive sweating, thirst, rapid respiration, anxiety and restlessness.

At necropsy, the chief findings in the mice were failure of the blood to clot and deep yellow coloration of the urine retained in the urinary bladder.

FAIN, A. (1954). **Note sur une plante congolaise (*Kohantia*, Aff. *Caespitosa* Brem.) utilisée en médecine indigène au Congo Belge et sur ses relations possibles avec l'hématurie des bovidés.** [*Kahantia caespitosa*, a common pasture plant in the Belgian Congo possibly a cause of bovine chronic haematuria.]—*Bull. Soc. Path. exot.* 47, 119-121. 1773

F. described the case of a human patient who developed haemorrhagic cystitis after drinking a decoction of *K. caespitosa*, a plant

used in native medicine for its purgative properties.

He suggested that bovine chronic haematuria might be caused by feeding on this plant, which is common on the pastures of the region.—A.S.

BACHHUBER, T. E. & LALICH, J. J. (1954). **Production of dissecting aneurysms in rats fed *Lathyrus odoratus*.** — *Science*. **120**, 1772-1773.

Ponsati & Baird [*V.B.* **23**, 1698] had shown that sweet peas (*Lathyrus odoratus*) when fed to growing rats caused aortic

aneurysm and skeletal lesions. The present authors report on further studies using both sweet pea meal and extracts of the meal. Of 28 test rats 14 died of aortic rupture and in 3 others aortic aneurysm was found on P.M. examination. None of the 17 controls had aortic aneurysm.

The addition of casein to the diet had a protective effect. The aortic lesions are described and illustrated. The lesion is a dissecting aneurysm affecting the aortic arch. [The resemblance of the lesions to those described in turkeys by McSherry, B. J. *et al.* (*V.B.* **24**, 3877) is very striking.]—M.C.

See also abst. 1836 (report, Western Australia).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease).

KAUFMANN, H. P. [Direktor des Instituts für Pharmazie und Chemische Technologie der Universität Münster und des Landes-Untersuchungsamtes Nordrhein - Westfalen.] (1953). *Arzneimittel-Synthese. [Drug synthesis.]* pp. xii + 834. Berlin: Springer-Verlag. DM 87. **1775**

The subject matter of this book is based on lectures given by the author during 30 years' work in pharmaceutical chemistry in the Universities of Jena, Berlin and Münster and comprises the following sections:—Introduction dealing with history, classification and problems; drugs which act on the central nervous system; drugs which act on the peripheral nervous system; drugs for the heart and vascular system; compounds which have a diuretic effect; drugs which act on the digestive tract; inhibition of mitosis; vitamins and hormones; disinfection and chemotherapeutics; and antibiotics.

There are 26 illustrations, and a chart of the pyridoxin synthesis; tables of pathological micro-organisms; a literature index; an extensive patent index; and author and subject indexes.

With continual reference throughout the text to recent developments and current literature, and the list of patents, a comprehensive view is given of modern drugs, and the volume provides a useful reference book in the libraries

of workers having chemical, pharmaceutical, medical or veterinary interests.

—E. MARSH JONES.

LORENZETTO, G. (1954). Gli antiistaminici di sintesi nella cura della mioglobinuria parossistica del cavallo. [*Treatment of myohaemoglobinaemia in horses with synthetic antihistamines.*]—*Veterinaria, Milano*. **3**, No. 2. pp. 9-11. [English summary.] **1776**

A clinical note on the treatment of myohaemoglobinaemia in horses; 7 cases were reported to be cured.—G. P. MARSHALL.

LANGFORD, H. G., BERNHAUT, M. & HOFF, E. C. (1954). **Effects of pentobarbital and ether upon vasomotor responses from cerebral cortex of the dog.** — *Proc. Soc. exp. Biol., N.Y.* **87**, 561-563. [Authors' summary modified.] **1777**

Electrical stimulation of the anterior cerebral cortex of the dog under pentobarbital anaesthesia gave predominantly depressor responses. Under ether anaesthesia the response was usually pressor. Some stimuli were followed by a rise in blood pressure for 1-2 min., while with others the effect lasted only for 15-20 sec.

The mode of action of these anaesthetics in affecting the cortically induced blood pressure response is not understood.

See also absts. 1560 (antiseptic hand cream); 1586 (fowl typhoid); 1624 (aureomycin); 1634-1635 (coccidiosis); 1657 (equine encephalomyelitis); 1667 (hepatic manifestations in mice following urethane and methylformamide treatment); 1676 (plant extracts as antiviral agents); 1694 (phenothiazine); 1701-1702 (piperazine adipate anthelmintic); 1706 (proteolytic enzymes as anthelmintics); 1707-1709 (pineal body extract for fattening of pigs); 1770 (D.D.T. poisoning); 1803 (Danish legislation concerning antibiotics); 1804 (German regulations concerning antibiotics); 1817-1820 (sex hormones).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

MCDOWELL, R. E., LEE, D. H. K. & FOHRMAN, M. H. (1954). **The measurement of water evaporation from limited areas of a normal body surface.** — *J. Anim. Sci.* **13**, 405-416. [Authors' summary modified.] **1778**

The authors described a method for measuring the rate of water evaporation from selected areas of skin without altering markedly the humidity of the air to which it is exposed. Air is circulated alternately through a capsule attached to the skin and an absorber containing a saturated soln. of a salt giving the desired vapour pressure, the gain in wt. of the absorber indicating the evaporation from the skin. A supplementary "maintenance" circuit is used to keep up air flow through capsules when they are not subject to measurement.

They gave samples of results with cows under hot conditions. Different areas give different rates, especially under the less hot conditions. The rate of evaporation is increased with the hotter conditions. No significant differences were found between Jersey and Sindhi-Jersey crossbred cows for areas on the fore-chest and abdomen. The rates for these areas under severely hot conditions (105°F., and 34 mm. Hg vapour pressure) reach 660 g./sq. m. per hour.

The same technique applied to rabbits under the same hot conditions revealed virtually no evaporation.

CHASE, H. B. (1954). **Growth of the hair.** — *Physiol. Rev.* **34**, 113-126. **1779**

C. gave an account of the anatomical development of the hair follicle in the mouse and rat in order to clarify the phases in the cyclical activity of the follicle. He discussed on a structural basis the limited experimental work on this subject.—A. SEAMAN.

SMITH, A. U. (1954). **Frostbite in golden hamsters revived from body-temperatures below 0°C.** — *Lancet.* **267**, 1255-1259. [Author's summary modified.] **1780**

S. placed g. pigs in cold baths at temperatures below 0°C. He described the differential diagnosis of super-cooling and freezing in these animals by reference to records of colonic and subcutaneous temperatures. Of 60 hamsters which were transferred to propylene-glycol baths at -5°C., with colonic temperatures between +2° and +3°C., 35 froze and 25 super-cooled. After resuscitation the pinnae were

found to be frostbitten in two of the frozen animals, and in none of those which super-cooled. Mild frostbite of paws and pinnae occurred when brine baths at -5°C. were substituted for propylene glycol. Severe frostbite resulted when the frozen parts were bent or when solid CO₂ was applied to them.

Animals frozen in cold air (-6° to -20°C.) or in propylene-glycol baths at -10°C. succumbed within 24 hours with severely frostbitten hind-paws.

Of hamsters transferred to propylene-glycol baths at -5°C. with body-temperatures of +5°C., a high proportion developed frostbite of the extremities. Six of the animals with typical lesions had been supercooled, with no evidence of peripheral freezing.

HAMILTON, H. L. (1953). **The chick embryo in biological research. Sensitive periods during development.**—*Ann. N.Y. Acad. Sci.* **55**, Art. 2, pp. 177-187. [Author's conclusions modified.] **1781**

Each organ system in the chick embryo appears to have its own specific periods of high sensitivity. These may occur during its formation, during its rapid differentiation, during its onset of function, or in its regulation with respect to the environment or to other systems in the embryo. The disturbance of any system or process may lead to asynchronies which ultimately result in mortality; deaths from such causes may occur at any time during development, but tend to be cumulative at certain general "critical periods", because the normality of certain processes, e.g. gastrulation, circulation, respiration, is prerequisite to further development.

TOGNI, G. P. (1954). **Pharmakologische und chemische Untersuchungen über die Cholinesterase in der Pansenwand des Rindes. [Pharmacology and chemistry of cholinesterase isolated from the wall of the rumen of cattle.]**—*Schweiz. Arch. Tierheilk.* **96**, 122-126. [English, French and Italian summaries.] **1782**

The activity of this enzyme was found to be inhibited by drugs influencing the parasympathetic nervous system.—C. W. OTTAWAY.

KLEMENT, A. W., JR., AYER, D. E. & MCINTYRE, D. R. (1954). **Simultaneous use of I¹³¹ and Cr⁵¹-labelled red cells in blood volume studies in the goat.**—*Proc. Soc. exp. Biol., N.Y.* **87**, 81-85. [Authors' summary modified.] **1783**

The authors drew a sample of blood, labelled the albumin with ^{131}I and the red cells with ^{51}Cr , and reintroduced it into the bloodstream.

Determinations of radio-activity in subsequent samples allowed the total volumes of red cells and plasma to be calculated. Volumes and distributions found by this method in 4 goats were within the range of values found in the goat by other methods. They discussed the limitations of the method.

MARVIN, H. N. (1954). **Phenylhydrazine-induced changes in metabolism of pigeon blood and bone marrow.**—*Amer. J. Physiol.* **179**, 338-342. [Author's summary modified.] **1784**

Pigeons given 5 mg. phenylhydrazine hydrochloride *per os* daily for 28 days developed a maximal anaemia by the 7th day, followed by partial recovery. A maximal leucocytosis of all cell types also developed by the 7th day, with return to nearly normal by the 28th day. The number of thrombocytes was not significantly changed. A rough estimate of marrow proliferation indicated that maximal activity was reached by the 14th day, and was maintained.

Endogenous oxygen consumption and succinoxidase activity per blood or marrow cell increased to a max. by the 7th day, and then decreased to, or toward, normal levels. Choline oxidase activity of normal blood and marrow cells appeared to be very slight, if present at all, and was not increased when marrow was actively proliferating new cells.

With concentrations of $5 \times 10^{-6}\text{M}$ or less of the drug, *in vitro*, the oxygen consumption of the marrow remained essentially normal, but with concentrations of $5 \times 10^{-5}\text{M}$ or greater there was a progressive diminution of O_2 consumption.

CALHOUN, M. L. (1954). **A cytological study of costal marrow. I. The adult horse.**—*Amer. J. vet. Res.* **15**, 181-196. **1785**

CALHOUN, M. L. (1954). **A cytological study of costal marrow. II. The adult cow.**—*Ibid.* **395-404.** **1786**

I. C. described the normal cytological picture of bone marrow obtained from the ribs of 7 healthy horses. Peripheral blood samples were taken at the same time as the marrow samples for comparison.

II. C. described the normal cytological picture of the bone marrow of the cow, based on samples obtained from the ribs of 14 cows. In one animal, samples taken from five different ribs were compared: C. found that the proportion of erythroblasts and normoblasts de-

creased in samples from the 8th to the 12th rib, and the proportion of neutrophils increased.—R.M.

HORN, V., JAHN, U. & WILLE, H. (1953). **Das Knochenmarkzellbild im Sternalpunktat des gesunden Hundes. [Sternal marrow biopsy and the cell picture in healthy dogs.]**—*Arch. exp. VetMed.* **7**, 177-191. **1787**

The authors described the cytology of bone marrow obtained by sternal puncture from 55 healthy dogs, and gave figures for the proportion of each type of cell present.—R.M.

WERTHESEN, N. T., MILCH, L. J., REDMOND, R. F., SMITH, L. L. & SMITH, E. C. (1954). **Biosynthesis and concentration of cholesterol by the intact surviving bovine aorta *in vitro*.**—*Amer. J. Physiol.* **178**, 23-29. **1788**

Cholesterol concentration in the aorta *in vitro* is related to glucose uptake and active cholesterol biosynthesis occurs. Cholesterol content is least at the aortal origin, greatest at the bifurcation. There is no correlation between lipoprotein in perfusate and aorta cholesterol. Biosynthesis is very rapid in the aorta.

—F. R. PAULSEN.

COPENHAVER, J. H., JR., NAGLER, M. E. & GOTH, A. (1953). **The intracellular distribution of histamine.**—*J. Pharmacol.* **109**, 401-406. **1789**

Various fractions of dog liver were isolated by differential centrifugation, and about half the histamine present was found to be concentrated in the mitochondrial fraction, the rest being evenly distributed between the remaining fractions. Anaphylactic shock in dogs mostly released a significant amount of histamine from the mitochondria and variable amounts from the other fractions.—G. P. MARSHALL.

DEMKE, D. D. (1954). **A brief histology of the intestine of the turkey poult.**—*Amer. J. vet. Res.* **15**, 447-449. [Author's summary modified.] **1790**

While the normal histological structure of the small intestine, caeca, and rectum of the turkey is essentially similar to that of the chicken, several important differences were noted. No villi were found in the sections examined from the mid-portion of the caeca. Argentaffin cells were present in the epithelium and tunica propria from duodenum to rectum, including the caeca. Lymphoid tissue was present throughout the intestine and caeca and was also seen in the tunica propria of a day-

old poult. No eosinophile leucocytes were found in the mucosa or the connective tissue stroma of the intestine in the sections examined.

KIM, K. S. & BOLLMAN, J. L. (1954). **Effect of electrolytes on formation of intestinal lymph in rats.**—*Amer. J. Physiol.* **179**, 273-278. [Authors' summary modified.] 1791

Among the major electrolytes tested, only the cation, sodium stimulated the formation of intestinal lymph in rats in the presence of halogens or bicarbonate as anions, when given into the stomach. The optimal concentration for the lymphagogic effect of saline is 0.9%. The authors discussed the possible mechanism of the formation of intestinal lymph.

SHIRLEY, R. L., JETER, M. A., FEASTER, J. P., MCCALL, J. T., OUTLER, J. C. & DAVIS, G. K. (1954). **Placental transfer of Mo^{99} and Ca^{45} in swine.** — *J. Nutr.* **54**, 59-64. [Authors' summary modified.] 1792

Using radio-active isotopes the authors studied the extent to which molybdenum and calcium were transferred to the developing foetus in pigs of the Duroc breed. Mo^{99} was readily absorbed after oral administration to the sows and was widely distributed in their tissues: little or none was found in the various tissues of the foetuses, indicating a placental barrier to this element. Ca^{45} was readily transferred to the developing foetus and a greater percentage of it was found in the foetal bones per unit of wt. than in the bones of the sows. No significant differences were observed in the uptake and distribution of Mo^{99} and Ca^{45} between sows in their first and second pregnancies. Approx. 55% of the orally administered labelled molybdenum was excreted in the urine and 8% in the faeces within 30 hours. Approx. half the intake of Ca^{45} was excreted in the faeces and only a trace in the urine during the corresponding period.

LOBBAN, M. C. (1955). **Some observations on the intracellular lipid in the kidney of the cat.** — *J. Anat., Lond.* **89**, 92-99. [Abst. from author's summary.] 1793

L. studied the occurrence and distribution of intracellular lipid in the kidneys of 55 adult cats and 32 kittens. A marked increase in the deposition of intracellular kidney lipoids was found to be associated with the loss of sexual function in males and with the luteal phase of the oestrous cycle in the female. There was histochemical evidence that part, at least, of the intracellular lipid is of a steroid nature, and that the steroids present are more likely

to be allied to the oestrogens than to the male sex hormones.

He discussed the significance of these findings and the possible role of the anterior pituitary gonadotrophins in connexion with them.

KRAMÁR, J. (1954). **Endocrine regulation of the capillary resistance.**—*Science.* **119**, 790-792. 1794

K. claimed to have obtained proof that the adrenal cortex is intimately connected with capillary resistance. Cortisone, but not A.C.T.H., could prevent "capillary crisis" (a sudden drop in, followed by a period of abnormally low, capillary resistance resulting from exposure to various forms of stress) in rats. There was some evidence that somatotrophic hormone antagonized cortisone during this crisis, and that this took place at a peripheral level, without the mediation of the adrenal cortex.—F. L. M. DAWSON.

ELKELES, A. (1954). **Experiments on the existence of a blood/adrenal-cortex barrier.**—*Lancet.* **267**, 1153-1154. [Author's summary modified.] 1795

When E. injected the acid vital dyes, kiton fast green V, light green S.F., and phloxine intravenously into rabbits, which he killed 10-30 min. later, he found that the brain and the adrenal cortex remained unstained, in contrast to other organs.

The basic dye neutral-red chloride stained the brain and the adrenal cortex even when injected in amounts which produced only faint coloration of most organs and tissues. The brain stained more intensely than the adrenal cortex.

He considered that this observation that the adrenal cortex reacts to vital dyes in the same way as does brain tissue invalidates the previously held concept of a barrier function solely confined to the cerebral capillaries.

He suggested that the large amount of lipoids in the brain and in the adrenal cortex is probably an important factor in the affinity of these organs for basic substances and their lack of affinity for acid substances.

He considered his results to suggest that neurotropic substances and even viruses may be stored in the adrenal cortex, and that the adrenal cortex plays a part in the causation of the diseases produced by these agents.

FILOTTO, U. (1954). **Architettura e struttura del "cuscinetto digitale" nel cavallo.** [Structure of the digital cushion in the

horse.] — *Clin. vet., Milano*. 77, 225-233 & 257-263. [English summary.] 1796

The digital cushion in the horse consists of an outer areolar layer, and a deeper lamellated one. Function is related to orderly arrangement of collagen and elastic fibres. Vascularization allows regulation of blood flow by pressure changes in the digital sheath. F. described the Pacinian corpuscles and the sweat glands.—F. R. PAULSEN.

BARONE, R. (1953). Arbre bronchique et vaisseaux sanguins des poumons chez les équidés domestiques. [Bronchial tree and blood vessels of the lungs in the horse.] — *Rec. Méd. vét.* 129, 545-564. 1797

B. described the pattern of the air and blood pathways of the lungs of 50 horses and 10 donkeys. From this an "ideal mammalian lung" is derived with a stem bronchus dividing into a pre- and a post-hilar bronchus which give rise to collateral dorsal, ventral, internal, and external branches. He discussed the effect of mechanical and functional forces in the course of phylogeny and ontogeny in the development of the present pattern.—R. N. SMITH.

GOODALL, A. M. (1955). Arterio-venous anastomoses in the skin of the head and ears of the calf.—*J. Anat., Lond.* 89, 100-105. [Author's summary slightly modified.] 1798

G. found arterio-venous anastomoses in the

See also absts. 1845 (international review of cytology); 1846 (textbook, anatomy of domestic animals); 1847 (book, anatomy of the bovine foot); 1850 (book, biochemistry of semen).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

EDWARDS, J. (1955). Scientific trends in milk production in Great Britain.—*Vet. Rec.* 67, 2-10. Discussion: pp. 10-14. [Abst. from author's summary.] 1800

E. discussed the changes which have occurred in the United Kingdom milk market and the ways in which trends in production are related to such changes. He examined the part which breeding is likely to play in the light of modern genetic theory and through the medium of artificial insemination (A.I.). There appears to be less certainty in the matter than many, including scientists and breeders, would like to believe.

However, the use of well-bred bulls by A.I. in all manner of herds has focused much more attention on the possibility of increased production by better management, A.I. being the breeding "equalizer". The scope for improvement is demonstrated in this sphere by United Kingdom records and production sur-

skin of the ears, forehead and cheek and in the perichondrium of the ear of the Ayrshire calf. They are direct shunts, sometimes straight, sometimes convoluted, joining arteries and veins in both the first and second vascular plexuses of the skin. They have thick walls containing epithelioid cells and have no internal elastic lamina. She suggested that they may play an important role in heat dissipation.

PRICHARD, M. M. L. & DANIEL, P. M. (1954). Arterio-venous anastomoses in the tongue of the sheep and the goat.—*Amer. J. Anat.* 95, 203-225. [Authors' summary modified.] 1799

The authors found arterio-venous anastomoses in the tongues of sheep and goats. These were situated in the corium and formed direct communications between the arteries and veins which respectively supply and drain the sub-epithelial capillary plexus. They thus occupy the same situation as do the arterio-venous anastomoses in the dog's tongue and connect the corresponding components of the lingual vascular bed. They described the cytology, structure and innervation of the anastomoses.

By virtue of their situation and large numbers these arterio-venous anastomoses probably make it possible for a very considerable flow of blood to pass through the superficial parts of the tongue without perfusing the sub-epithelial capillary plexus.

vey studies on Danish and Dutch records.

Much useful information concerning animal health emerges from the A.I. records now being kept for nearly 150,000 herds and 1,250,000 cows. He suggested that the A.I. inseminator service might be used to elicit other kinds of information as a form of operational field research.

MILLER, W. C., JR., PROCTOR, B. E. & GOLDBLITH, S. A. (1954). Recent developments in radiation sterilization of foods. — *J. Milk Tech.* 17, 159-163. 1801

Sterilization of foodstuffs by radiation is not yet a practical possibility, as there are several unsolved problems at present. It would seem, however, that macro-parasites, insects and worms can be destroyed by this method without harmful effect on the food.

—R. MACGREGOR.

HANNAN, R. S. (1953). **Electronic sterilization of foods.** — *Research, Lond.* **6**, 376-383. 1802

A readable introduction for the non-specialist to the subject of the sterilization of foods by ionizing radiations.

H. discussed the generators in use, but dealt mainly with the problems associated with the method, with particular reference to the taints which may be produced in food by irradiation.—A. SEAMAN.

BERGMAN, T. (1954). Sträng penicillinlag införd i Danmark. [**Strict legislation concerning penicillin in Denmark.**]—*Medlemsbl. svenskes VetFbd.* **6**, 282-283. 1803

Danish law, in force since the 15th August 1954, forbids the supply of milk containing antibiotics, e.g. penicillin, or substances which destroy them, e.g. penicillinase. The latter substances may not be added to milk or cream used for the manufacture of butter, cheese or other dairy products intended for export. Veterinarians are forbidden to supply, or prescribe to owners, antibiotics in any form in which they could be used for udder treatment and on the

day of each udder treatment the veterinarian must issue to the owner printed instructions concerning the law and inform him how long milk from the treated quarters must be withheld from delivery to the dairy; label the containers to be used for such milk with official forms giving details of the treatment, and inform the dairy concerning the treated herds. The official forms are supplied by the dairies. Offences are punishable by heavy fines.

B. discussed this legislation and the pros and cons for the possible adoption of similar measures in Sweden.—F.E.W.

BARKE, A. (1954). Der Verkehr mit Antibiotika enthaltenden Arzneimitteln zum Gebrauch für Tiere. [**Regulations concerning the sale of preparations containing antibiotics for veterinary use in Germany.**] — *Dtsch. tierärztl. Wschr.* **61**, 55-57. 1804

B. discussed the regulations governing the sale of antibiotic products in the various Länder of Germany, and concluded that there was no effective control. He advocated effective control by revision and standardization of the regulations.—A.S.

See also absts. 1564 (inspection of carcasses infected with non-pathogenic organisms); 1570 (bovine TB. in man); 1532-1533 (salmonella in meat products, slaughter animals and abattoirs); 1693 (heat treatment of swill); 1835 (report, Northern Ireland).

REPRODUCTION AND REPRODUCTIVE DISORDERS

DYRENDahl, I. (1954). **Some studies of the methods of freezing bull semen. I. The influence of different brands of glycerol on the survival of spermatozoa.**—*Nord. VetMed.* **6**, 780-784. [In English. German and Swedish summaries. Abst. from English summaries.] 1805

Four different preparations of glycerol (ordinary glycerol of Swedish Pharmacopoeia standard and three brands of glycerol, "suited for analysis") were compared in freezing tests with semen from 8 bulls, the results being judged by supra-vital staining by the method described by Blom [*V.B.* **20**, 2938]. Significant differences were obtained. In the best brand of glycerol about 45% of the spermatozoa were unstained and in the worst about 30%, the two other brands yielding intermediate results. Differences in breeding efficiency were found between the samples of semen with which the "best" and the "worst" glycerol had been used respectively.

LOVELOCK, J. E. & POLGE, C. (1954). **The immobilization of spermatozoa by freezing and thawing and the protective action of**

glycerol. — *Biochem. J.* **58**, 618-622. [Author's summary copied *verbatim*.] 1806

The spermatozoa of the rabbit, the bull, the fowl and the herring were subjected to freezing and thawing in media containing various concentrations of glycerol, and observations made of the resulting changes in motility of the spermatozoa. These observations indicated that the damage suffered by the spermatozoa during freezing and thawing was caused by their exposure to excessive concentrations of salt when water was removed as ice. The concentration of electrolyte above which irreversible damage occurred was characteristic for the spermatozoa of each species tested. The protective action of glycerol was due to its ability to prevent the salt concentration rising above this level.

DYRENDahl, I. (1954). Undersökningar rörande förekomsten av zink i tjursperma. [**Occurrence of zinc in bull semen.**]—*Nord. VetMed.* **6**, 873-882. [In Swedish. English and German summaries. Abst. from summaries.] 1807

D. examined the zinc content of 70 specimens of fresh semen from 6 Swedish bulls used

in artificial insemination. The mean value was 28.41 ± 0.99 p.p.m. Zn. The averages for the various bulls lay between 25.62 and 36.52 p.p.m. Zn. The differences in the zinc content between the individual bulls were statistically significant ($p < 0.001$). The specimens were also examined for ejaculate volume, density of spermatozoa, motility and dry-matter content; in these respects also there were significant differences between the individual bulls ($p < 0.001$).

There was a slight negative correlation between the ejaculate volume and the zinc content. No relation was found between the zinc content of the semen and its fertilizing capacity.

GLOVER, T. D. (1955). **The semen of the pig.** — *Vet. Rec.* **67**, 36-40. [Author's summary modified.] **1808**

Boar semen differs from that of other domestic animals with regard to volume, density of spermatozoa, mode of ejaculation and chemical composition; only that of the stallion bears any fairly close resemblance to it. It is possible that the spermatozoon of the boar is physiologically different from that of bull and ram, since boar spermatozoa do not survive well *in vitro* even when freed from the accessory fluids. In view of the unusual chemical composition this must be taken into consideration in relation to the problems of survival. It remains for fundamental knowledge to be applied to the development and refining of artificial insemination techniques, together with more detailed studies on the morphology and metabolism of the spermatozoan cells in the semen of this species. G. described a technique for the collection of semen from boars using an adapted type of artificial vagina with an "artificial sow".

MORAVEC, D. F., MUSSEHL, F. E. & PACE, D. M. (1954). **Physiological characteristics of turkey semen. II. Factors affecting motility and fertilizing capacity.** — *Poult. Sci.* **33**, 1126-1129. [Authors' summary modified.] **1809**

The authors studied the effects of an artificial diluent on motility and fertilizing capacity in turkey semen. They described a synthetic diluent which supported motility of turkey spermatozoa over a period of 72 hours, and maintained sufficient numbers of live spermatozoa to fertilize eggs.

Within the limits tested, the duration of motility of turkey spermatozoa varied inversely with the temperature and directly with the dilution of the semen.

Turkey spermatozoa *in vitro* lived longer in diluted than in undiluted semen.

The fertilizing capacity was not affected appreciably by increasing the number of spermatozoa above 756×10^5 . It decreased as the period of time *in vitro* increased.

Motility in turkey spermatozoa is an indicator, but not a wholly dependable one, by which fertilizing capacity may be measured.

Diluted turkey spermatozoa can be retained over 24-, 48-, and 72-hour periods *in vitro* and still retain some fertilizing power, and produce some normal, vigorous poults.

BRATTON, R. W., FOOTE, R. H. & HENDERSON, C. R. (1954). **The relationship between fertility and the number of spermatozoa inseminated.** — *J. Dairy Sci.* **37**, 1353-1356. [Authors' summary copied *verbatim*.] **1810**

Three groups of approximately 4,100 first service dairy cows each were inseminated artificially with three different concentrations of motile spermatozoa, estimated to be 14.3×10^6 , 9.5×10^6 , and 4.7×10^6 ; the 60- to 90-day per cent nonreturns were 70.5, 70.9 and 66.7 respectively.

BLAIR, G. W. SCOTT & GLOVER, F. A. (1955). **Early pregnancy tests from studies of bovine cervical mucus.** — *Brit. vet. J.* **111**, 3-11. [Authors' summary modified.] **1811**

The authors described a rapid and simple method for measuring "over-all consistency" of bovine cervical mucus. The method involved measurement of the rate of flow of the secretion through a fine tube under constant pressure. With the exception of animals showing well-defined disease processes of the genital system (5% of the population examined) it was found that in pregnancy the "consistency" generally exceeded a certain value and that in non-pregnancy it was less than this critical value. In this way, pregnancy was diagnosed correctly in 77% of cases 4 weeks after conception and in 87% of cases after 5 weeks: the latter figure was 96% if cows which had been previously sampled were excluded. Non-pregnancy was determined correctly in 91% of cases, the errors being generally associated with sub-fertility or suspected early foetal death.

Further preliminary experiments suggested that the intensity of a band in the ultra-violet absorption spectra of cervical secretions is smallest at oestrus, somewhat larger at dioestrus and greatest in pregnancy. This may lead to a comparatively simple alternative test.

BONE, J. F. (1954). Crystallization patterns in vaginal and cervical smears as related to bovine ovarian activity and pregnancy — *Amer. J. vet. Res.* **15**, 542-547. [Author's conclusions and summary modified.] 1812

Crystallization patterns formed by allowing smears of cervical mucus from cows to dry on clean glass slides appeared to be related to the progesterone activity of the ovaries. During oestrus, ovulation, and the development and involution of the corpus luteum the cervical mucus showed definite crystallization patterns which were absent from mucus taken during pregnancy or at the height of corpus luteum formation. Vaginal mucus gave inconstant and unreliable results.

B. claimed that, providing accurate records of the cows are kept, this test gave an indication of pregnancy as early as 10 days after conception. However, since crystallization of mucus appeared to be related to progesterone activity rather than to the actual presence or absence of an embryo, he concluded that the test would not replace existing methods of pregnancy diagnosis.

GÜNTHER, S. (1952). Zur Physiologie und Anatomie der inneren Geschlechtsorgane. I. Übersicht über bisherige experimentelle Untersuchungen an den inneren Geschlechtsorganen. II. Operative Wege zur Anlegung einer Fistel der inneren Geschlechtsorgane bei der Hündin. III. Das Einführen einer Sonde in das Uterushorn der Hündin nach Dilatation des Muttermundes. [Physiology and anatomy of the genital organs of the bitch and methods for collecting specimens of secretions from the fallopian tubes and uterus.] — *Arch. exp. VetMed.* **6**, 280-291; 292-300 & 301-307. 1813

Human and animal fallopian tube contents, which on the basis of histochemical and staining reactions appeared not to be mucin, were shown, also by earlier workers, to be of a fluid nature. G. undertook further investigation by animal experiment. On inserting a silver ring into the uterus previous results were confirmed, viz. no histological change in the endometrium resulted. A technique was devised by which a specially devised metal cannula could, at laparotomy, be inserted into the uterine horn, and fluid uterine contents were successfully drawn off through it. Collection *via* the cervical canal was next tried, but the details given show it to have been less satisfactory.

—F. L. M. DAWSON.

POMEROY, R. W. (1955). Ovulation and the passage of the ova through the fallopian tubes in the pig.—*J. agric. Sci.* **45**, 327-330. [Abst. from author's summary.] 1814

P. checked the rate of passage of ova down the fallopian tubes in 18 living sows by laparotomy and in 15 sows and gilts at P.M. examination. Both sets of data indicated that the ova enter the uterus between 24 and 48 hours after ovulation and not at 72 hours as suggested by earlier workers. He suggested that the rapid passage of ova through the fallopian tubes of the pig may be facilitated by the progesterone from the large number of corpora lutea in the ovaries of that species.

PERRY, J. S. (1954). Parturition in the pig. —*Vet. Rec.* **66**, 706-709. [Author's summary slightly modified.] 1815

A gilt and a sow, both of which had to be slaughtered at or near full term for reasons unconnected with pregnancy, were killed after farrowing had begun, and the reproductive tracts were examined P.M. The sequence of events was seen to be similar in both cases and was apparently typical of the process of parturition in the pig.

The ends of the chorionic sacs of all foetuses rupture in the early stages of parturition, but remain closely adherent to the endometrium to make of the uterine horn a very slippery mucus-lubricated tube. The foetuses can be moved freely within this tube while retaining their placental supply by means of the umbilical cord, which is extremely extensible. They are not necessarily born in the order of their position in the uterine horns in pregnancy nor with regard to their location in the left or right uterine horns.

The intimate apposition of the chorionic and uterine epithelia, in characteristically interlocking villi, is retained right up to term. It would appear that loosening of the membranes follows the collapse of intra-epithelial (chorionic) capillaries in these villi subsequent upon the severance of the umbilical cord.

NEHER, G. M. & ZARROW, M. X. (1954). Concentration of progesterin in the serum of the non-pregnant, pregnant and post-partum ewe.—*J. Endocrin.* **11**, 323-330. [Authors' summary modified.] 1816

The authors used the Hooker-Forbes assay to determine the concentration of free progesterin in the serum of ewes at various stages of the reproductive cycle.

During the oestrous cycle, the concentra-

tion varied from 0.3 to 2 $\mu\text{g.}/\text{ml.}$ at oestrus to 6 $\mu\text{g.}$ in the luteal phase. During pregnancy, the level of progesterin rose from 1 to 2 $\mu\text{g.}/\text{ml.}$ at mating to a peak of 8–12 $\mu\text{g.}/\text{ml.}$ at parturition. The concentration of progesterin remained steady at a level of 6–8 $\mu\text{g.}$ from the 40th to the 100th day of pregnancy. A second rise occurred at about the 120th day of pregnancy.

In all sheep parturition took place before the drop in serum progesterin. By the 10th day *post partum*, however, the concentration of the hormone dropped to 1 or 2 $\mu\text{g.}/\text{ml.}$ and remained at this level throughout lactation. Removal of the ovaries between the 66th and 114th days of gestation had no effect on the level of progesterin in the blood of 5 ewes. The pregnancies remained unaffected, and the conc. of progesterin increased in a manner comparable to that seen in pregnant sheep with intact ovaries. The authors suggested that the placenta is the major source of progesterin during the last 100 days or so of pregnancy in sheep.

BIGGERS, J. D. & CLARINGBOLD, P. J. (1955). **Selection for local (intravaginal) action of oestrogens.**—*J. Endocrin.* **12**, 1-8. [Authors' summary slightly modified.] **1817**

A randomly bred line of albino mice was selected into lines of increased and decreased sensitivity to oestrogen as determined by the intravaginal action of oestrone. Ovariectomized mice were used in the tests, successive generations being bred from the sibs of test animals.

The two lines showed different sensitivities when tested with oestradiol-3:17 β given by the intravaginal route. When tested by the subcutaneous injection of oestrone, the two lines were of equal sensitivity.

The authors discussed the significance of these results in relation to the mode of action of oestrogens.

CLARINGBOLD, P. J. & BIGGERS, J. D. (1955). **The response of inbred mice to oestrogens.**—*J. Endocrin.* **12**, 9-14. [Authors' summary slightly modified.] **1818**

The vaginal response of two inbred lines of mice (C_{57} and CBA), and their reciprocal crosses, to oestrone and oestradiol-3:17 β was studied, with the subcutaneous and intravaginal routes of administration.

In all cases the variability of the response of F_1 hybrids was approx. 25% of the variability of the inbred lines. In the intravaginal tests the median effective dose (M.E.D.) was the same for both inbred lines, while the M.E.D. for the F_1 hybrids was less. In the subcutane-

ous tests the C_{57} line had a lower M.E.D. than the CBA line, while the M.E.D. for the F_1 hybrids was lower than for both the inbred lines.

This phenomenon is an example of heterosis. The authors discussed the findings in relation to bioassay and experimental study of oestrogens, and to mammary carcinoma in the mouse.

DONNET, V. & GARNIER, L. (1953). Action des hormones sexuelles sur l'absorption intestinale de l'eau. [Action of sex hormones on absorption of water from the intestines.]—*C. R. Soc. biol. Paris.* **147**, 440-442. **1819**

Subcutaneous injection of progesterone with oestradiol caused an increased absorption of water by the intestines proportionate to the amounts of hormones injected. Pregnancy appeared to have a similar effect on water absorption.—R. N. SMITH.

MACKINTOSH, J. W. F. (1954). **Observations on treatment of the regularly returning cow by enucleation of the corpus luteum.**—*N.Z. vet. J.* **2**, 68-72. [Author's summary modified.] **1820**

Apparently normal cows which regularly returned to service were successfully treated by expression of the corpus luteum between 5 and 14 days after oestrus. Of cows so treated, and not already in calf to the previous service, 61.5% conceived to the service which ensued in 2-9 days, 30.2% to the next, and 1.7% to the third service. A total of 93.4% became pregnant within 7 or 8 weeks. Cases which did not return after treatment and carried on to full term, were 11.4%.

Supplementary feeding of some mineral elements which may be involved has been considered and preliminary treatments were carried out.

MAQSOOD, M. (1954). **Role of thyroid hormone in reproduction.**—*Zootec. e Vet.* **9**, 393-398. [In English. Italian summary. Author's summary slightly modified.] **1821**

The contradictory results obtained by a number of investigators on the effects of the thyroid gland on various reproductive processes in certain species of animals appear to be due to lack of appreciation of the normal thyroxine secretion rate of the animal during thyroid therapy. Continuous administration of thyroxine within the optimal physiological doses resulted in precocious sexual development in young male mice and rabbits and in rams.

Thyroid therapy greatly improved the libido and semen qualities and stimulated spermatogenesis in subfertile rabbits which before the treatment showed very poor libido, deterioration in semen quality and arrested spermatogenesis. The decrease in the thyroxine secretion rate which occurs with advancing age is linked up with poor fertility in older rabbits.

Continuous feeding of thyroid hormone during the early spring and summer months prevented the seasonal decline in fertility in Suffolk rams in England. Thyroid therapy by stimulating the process of spermatogenesis in the testes of rabbits and rams, checked those types of spermatozoan abnormalities which appear to be associated with defective spermatogenesis. The addition of thyroxine in critical concentrations to bull semen samples of average spermatozoan density resulted in a significant increase in the oxygen uptake of the spermatozoa after 24-46 hours' storage at +5°C. The addition of thyroxine to bull semen may have some practical application in the field of artificial insemination.

Thyroid therapy resulted in a significant increase in the daily milk yield of treated buffaloes kept under subtropical conditions (Lahore).

Thyroidectomy or prolonged thiouracil treatment arrested the onset of sexual maturity in male mice and rabbits and in rams.

HOLMES, J. R. & YOUNG, G. B. (1954). **Symmetrical alopecia in cattle.** — *Vet. Rec.* **66**, 704-706. [Authors' summary modified.] **1822**

See also absts. 1582 (abortion in cattle associated with S. dublin); 1589-1598 (brucellosis); 1608-1612 (V. fetus infection); 1632 (trichomoniasis); 1721 (nutritional congenital malformations); 1736 (hydrocephalus in young rabbits associated with maternal vitamin A deficiency); 1744 (ovine pregnancy toxæmia); 1745 (changes in the liver of pregnant sheep during various nutrition levels); 1746 (postparturient myorrhesis in cattle); 1747 (serum calcium and magnesium and plasma phosphate levels in parturient cows); 1850 (book, biochemistry of semen); 1851 (book, veterinary obstetrics).

ZOOTECNHY

SMITH, A. H., WILSON, W. O. & PACE, N. (1954). **The effect of high altitude on the growth of turkeys.** — *Growth.* **18**, 27-35. [Authors' summary slightly modified.] **1825**

Day-old turkey poult were reared at an altitude of 10,500 feet. Their rate of growth and attainment of sexual maturity were the same as in similar turkeys kept at sea level; the main difference between the two groups was a relative increase in the size of the heart in those kept at high altitude. Increase in size of the lungs and spleen, which has been observed in mammals kept at a high altitude, was not observed in the turkeys.

The authors reported the incidence of alopecia in two Friesian herds. The condition develops some time after birth, which probably accounts for the fact that it has been observed only in females. Pedigree analysis of four affected heifers and their normal sibs indicated that an autosomal recessive gene is involved.

FISCHER, H. (1953). **Genetische Betrachtungen über Anomalien der Milchdrüse des Rindes.** [Genetics of anomalies of the bovine udder.] — *Berl. Münch. tierärztl. Wschr.* **66**, 381-383. [English summary.] **1823**

F. discussed the literature of these conditions with reference to the results of his own investigation in Bavaria. He classified and discussed genotypes; bull records provide valuable evidence. He suggested that anomalies of the udder predispose to mastitis.

—C. W. OTTAWAY.

LITTLEJOHN, A. I. (1954). **Entropion in newborn lambs.** — *Vet. Rec.* **66**, 211-214. [Abst. from author's summary.] **1824**

Congenital entropion is widespread in newborn lambs in the south-east of Scotland. L. studied the breed incidence. She discussed treatment with emphasis on the correction of the condition by manipulation of the affected eyelid within an hour or two of birth; surgical procedures are then unnecessary.

In a small breeding experiment it was found that although the condition is not inherited as a simple Mendelian recessive character, it has a hereditary tendency.

WORSTELL, D. M. & BRODY, S. (1953). **Environmental physiology and shelter engineering with special reference to domestic animals.** XX. **Comparative physiological reactions of European and Indian cattle to changing temperature.** — *Res. Bull. Mo. agric. Exp. Sta.* No. 515, pp. 42. [Authors' summary copied verbatim.] **1826**

This report presents an interpretative integration of the effects of gradually rising dry-bulb temperature 50° to 105°F. (10° to 41°C.) and declining temperature 50° to near 0°F. (10° to -18°C.) on many physiological reactions of European and Indian-evolved mature

and yearling cattle. This integration is illustrated by 14 arithlog charts and summarized in 8 tables.

The "comfort zone" (maintenance of normal body temperature without serious aid from physical or chemical homeothermic mechanisms) was between about freezing and 60°F. The precise range of this comfort zone depends on the productive level—the higher the productive level and the larger the individual the greater the cold tolerance and the lower the heat tolerance.

Declining temperature to near 0°F. (−18°C.) had no appreciable effect on the heat production of the high-producing large, Holstein cows; but it increased greatly the heat production and feed consumption in the low-producing, small, Brahman cows, and to a less extent in the well-producing Jersey cows (of approximately the same weight but of 12 per cent lower surface area than the Brahmans). The declining temperature gradually reduced the rates of respiration, pulmonary ventilation, and moisture vaporization in the European cows. No other changes were observed. The animals—even the Brahman—appeared to have been comfortable under our laboratory conditions at 8° (−12°C.), and experience in wintering beef cattle outdoors in our mountain states indicates that they can withstand temperatures of −40°F. without harm.

Rising temperature, however, affected the European animals profoundly above the (to man) cool temperature level of 60°F. (16°C.) when the respiration and moisture vaporization rates were suddenly accelerated, reaching a maximum at about 85°F. (29°C.). The rectal temperature began to rise in high-producing European cattle at about 70°F. (21°C.) followed by depression of feed consumption, milk production, heat production, pulse rate, blood CO₂-combining power and ascorbic acid and increase in blood creatine. The low heat tolerance of cattle appears to be associated with their low moisture vaporization (for heat dissipation) and high heat production per unit surface area. Neither European nor Indian cattle "sweat" in the sense that man sweats.

The Brahman (Indian) cows lagged behind the European by about 15°F. in their rise in rectal temperature and other physiological reactions, due to their 12 per cent greater surface per unit weight, lower heat production, mostly because of lower productivity and possibly lower basal metabolism; also to low initial levels of the physiological functions, providing a greater range for increase under stress. But, as

the environmental temperature approached 105°F. (41°C.), the distress in the Indian cows approached that of European cows.

While our Brown Swiss and Holsteins were in the same body-weight and milk yield category, the Brown Swiss appeared to be much more heat tolerant than the Holsteins, and were approximately equal to that of the smaller Jerseys.

The ratio of evaporative cooling to heat production at 105°F. is about 200 per cent in man and only 100 per cent in cattle; above 80°F. this ratio increases 15 to 20 per cent per 1°C. in man and 3 to 5 per cent per 1°C. in cattle.

There seems to be much more urgent need for developing methods for protecting cattle against rising temperature above 80°F. (27°C.) than against declining temperature below freezing and zero.

TAYLOR, J. I., ROLLINSON, D. H. L. & HARKER, K. W. (1955). *Studies on the habits of zebu cattle. II. Individual and group variation within a herd.* — *J. agric. Sci.* **45**, 257-263. [Authors' summary slightly modified.] **1827**

The authors examined data collected during 336 hours of observation with 10 zebu cattle to assess the extent of variation between these animals and to the extent to which individuals conform to the general herd behaviour. A further use was made of the data to discuss the effects of individual animal behaviour on the numbers of animals it is necessary to observe. They concluded that the ten animals used are definite individuals, but at the same time behave as a herd. Considering the grazing and ruminating habits only, the following variations occurred:—Averaging the results over 8 and 6 days respectively on 2 different paddocks the range from the highest to the lowest time for the habits was less than 10%. On any one day the results for one animal were less than 15% above or below the herd mean, the majority of the differences being less than 5%. The actual patterns of behaviour for the animals are similar on any particular day. The possible accuracy of a behaviour study is reduced considerably if less than 4 animals are used. Above this number the increase in accuracy is probably proportional to the number of additional animals observed.

MCDOWELL, R. E., LEE, D. H. K., McMULLAN, H. W. FOHRMAN, M. H. & SWETT, W. W. (1954). *Body weights, body measurements,*

and surface area of Jersey and Sindhi-Jersey (F_1) crossbred females. — *J. Dairy Sci.* **37**, 1420-1428. [Authors' summary slightly modified.] 1828

The authors presented data on comparative weights, body dimensions, and the measured surface areas of Jerseys and Sindhi-Jersey (F_1) crosses.

The mean body weights of the crossbreds were greater than those of the Jersey dams at comparable ages and stages of lactation and the difference, which may be attributable to "hybrid vigour" in the crossbreds, was most evident from birth to 15 months of age.

Body measurements made at 6, 12, and 18 months of age and during first lactation showed that at the earlier ages the crossbreds were taller and had greater body width and depth, but that their body length was less. With the advance of age, the differences for

most measurements, other than weight, between the two groups diminished to a non-significant value or were even reversed. The crosses exceeded the Jerseys, however, in angle of rump and length of head at all ages. The average coefficients of variation for body weight and body dimensions were substantially the same for both groups.

The surface area was measured on 32 Jersey and 23 Sindhi-Jersey crossbred cows by use of a surface integrator. These areas were compared with body weights. Neither the ratio of surface area to body weight nor the ratio of surface area to the two-thirds power of body weight showed a significant difference between the two groups. In these animals a statistical analysis indicated that the surface area is related to the square root of body weight but to no appreciable extent to total body length.

TECHNIQUE AND APPARATUS

WADE, H. E. & MORGAN, D. M. (1954). Differentiation of growing and non-growing bacteria by a staining technique. — *Nature, Lond.* **174**, 920-921. 1829

Acid-extracted bacteria are stained at pH 3.5 with 0.5% toluidine blue and counter-stained with eosin-saturated 0.15N acetic acid. Actively growing bacteria stain blue-violet; the others are pink.—A. SEAMAN.

SIERING, H. (1954). Schädigung cytologischer Präparate durch verschiedene Fixierungsmittel. [Damage to cytological preparations caused by various substances used for fixing.] — *Acta med. scand.* **149**, 229-236. [In German. English summary.] 1830

S. observed the changes which occurred when various tissues, in serum or physiological saline, were irrigated with one or other of the fixatives:—osmic acid, picric acid, acetic acid, formol, methyl alcohol and ethyl alcohol. Changes were observed, as they occurred, by electron microscopy, and S. compared the extent of damage produced in internal cellular structures by the different fixatives.—A.S.

BALSTON, J. N. & TALBOT, B. E. [Compiled by.] (1952). *A guide to filter paper and cellulose powder chromatography*. pp. 145. London: H. Reeve Angel & Co. Ltd. Maidstone: W. & R. Balston Ltd. 8s. 1831

This is a quite remarkable little book which is in no way marred by its authors' commercial links. It provides a sound and closely refer-

enced review of chromatography in its now very numerous applications. Possibly the strongest feature of the book is the preliminary analytical approach which takes the reader, especially the less familiar, directly to the essentials of the chromatographic method. This circumvents an alternative approach through the irrelevant tangles of the scientific literature.

Later sections of the book deal briefly, but in adequate detail for intelligent reference to the original papers, with that considerable list of organic and inorganic materials which have been separated chromatographically.

Those research workers who have to take up the chromatographic method owe a considerable debt to the present authors for their powerful introduction to a powerful tool.

—C. J. BRADISH.

KAEMMERER, K. & NEUMANN, H. G. (1953). Fragen der praktischen Eiweisselectrophorese. [Practical aspects of electrophoresis of proteins.] — *Mh. Tierheilk.* **5**, 342-348. 1832

The authors described a modification of the technique for electrophoretic examination whereby the record is made direct on to the recording paper.—C. W. OTTAWAY.

BIÖRCK, G., DAMGAARD-NIELSEN, M., HAEGER, K., RYD, H. & WULFF, H. B. (1954). Box for refrigeration and rewarming in animal experimentation and human surgery. —

Scand. J. clin. Lab. Invest. **6**, 277-283.
[In English. Abst. from authors' summary.] **1833**

The authors discussed common methods for cooling patients for cardiac surgery. They

described a refrigerator unit suitable for human beings or for animals, also fitted with heating radiators for rewarming. They reported some experiments with dogs, cooled to about +20°C.

See also absts. 1565 (isolation of *B. anthracis* from soil); 1600 (diagnosis of leptospirosis); 1658 (cultivation of Eastern equine encephalomyelitis virus); 1761 (brom-sulphalein liver-function test in horses); 1763 (myelography in disc protrusion in dogs); 1765 (corticotrophin test for adrenal cortical function).

MISCELLANEOUS

EBERT, E. F., ROSEBOOM, B. B. & DALE, H. E.
(1954). "Deperitonealization" of the wall
of the rumen. — *Amer. J. vet. Res.* **15**,
405. **1834**

The rumen was sutured to the wall of the abdomen at the left flank, after both parietal

and visceral peritoneum had been scraped away from the area bounded by the sutures. The sutures were removed after 2 weeks, leaving the rumen firmly adherent to the left flank. By this means it was possible to insert a trocar repeatedly into the rumen for experimental purposes, without the danger of peritonitis.—R.M.

REPORTS

NORTHERN IRELAND. County Borough of Belfast. Extract (Municipal Abattoir) (City Veterinarian) from Report on the health of the County Borough of Belfast for the year 1950. [McLEAN, A.] pp. 8. Belfast: J. K. Rankin. **1835**

Animals slaughtered were:—cattle 49,448; calves 14,997; sheep and lambs, 115,033; goats 880; pigs 14,693. Condemnations for TUBERCULOSIS were 1.28% of the cattle, 0.14% of the calves, and 0.34% of the pigs. Of the total number slaughtered, 2,965 carcasses were condemned for the following reasons:—(1) dropsical and emaciated or fevered, 49.3%; (2) immaturity, 10.79%; (3) TUBERCULOSIS, 23.67%; (4) other bacterial diseases, 9.1%; (5) injuries, 2.83%; and (6) miscellaneous diseases, 4.31%. *Cysticercus bovis* was found in 1.19% of all cattle slaughtered. Distribution of the parasites was 80% in external masseter muscles, 17% in both external and internal masseters and 3% in left internal masseter only.

—J. A. GRIFFITHS.

WESTERN AUSTRALIA. (1954). Annual report of the Department of Agriculture for the year ended 30th June, 1953. pp. 45. Perth: W. H. Wyatt. [Items of veterinary interest pp. 13-14, 29, 40. (BARON HAY, G. K.)] **1836**

In a total of 16,604 cattle from 289 herds tested for TUBERCULOSIS during the year 1.68% of positive reactors were detected and slaughtered. All herds supplying whole milk to the metropolitan area and to the larger country towns have now been subjected to the tubercu-

lin test. JOHNE'S DISEASE was diagnosed for the first time in an Aberdeen Angus herd. The disease was apparently introduced by cattle imported from Victoria some 8 years previously. Present indications are that this disease may not be readily disseminated in the local environment and is unlikely to become a problem of serious economic importance in Western Australia. A total of 18,937 heifers in the dairying areas have been inoculated against BRUCELOSIS with Strain 19 vaccine. Breakdowns in immunity to BOTULISM in sheep were found to be due to a loss in antigenicity, during storage, of certain batches of a commercial botulinus toxoid; the fault has been corrected. VIBRIOSIS in cattle has been diagnosed for the first time. The disease appears to be widely distributed in dairy herds.

Despite vigorous endeavours to disseminate the virus of MYXOMATOSIS to control the rabbit population results have been disappointing, except in restricted areas such as the Geraldton district. Mosquito vectors considered responsible for spread of the disease in the eastern States are also present in Western Australia.

Investigations of PHOSPHORUS DEFICIENCY in dairy cows and of copper and cobalt metabolism of animals are being continued.

The experimental feeding of horses with *Crotalaria retusa* and *C. trifoliatum* in an endeavour to reproduce KIMBERLEY HORSE DISEASE, which was initiated in this State, has been transferred to the Northern Territory. An occurrence of PHALARIS STAGGERS in sheep has been investigated.

Work on siliceous URINARY CALCULI in

sheep is continuing, and several outbreaks of "BLUE COMB" DISEASE of poultry have received attention.—H. W. BENNETTS.

UNION OF SOUTH AFRICA. (1953). **The South African Institute for Medical Research. Annual Report for the year ended 31st December, 1953.** [CLUVER, E. H.] pp. 106. Johannesburg: The Institute. 1953

The report deals chiefly with matters of medical interest. The work noted in 1952 [V.B. 24, 1326] of the passage of diphtheria and other antitoxins through the intestines of sheep has been concluded. Because of the unsuspected deterioration of *Clostridium welchii* test-toxin used in the work, much of the early promise of a considerable passage of the antitoxin through the intestine into the circulation was not fulfilled.

Dr. Buchanan's investigation into the occurrence of human TUBERCULOSIS due to bovine type bacilli is still in progress and to date 309 specimens from 268 cases of suspected TB. had been examined. The bovine type had been identified in a few more cases since the 1952 report and other culturally dysgonic strains awaited confirmation by animal inoculation tests.

Studies were carried out on agglutination tests on human sera for BRUCELLOSIS. Of 59 serum samples from abattoir staffs 4 gave positive reactions in a titre of 1:50 by the direct agglutination method; of the remaining 55 samples, 11 proved positive by the modified Coombs test. The interpretation is still obscure.

Tests on RIFT VALLEY FEVER showed that vaccination of flocks of sheep with the egg-adapted neurotropic Smithburn strain of virus vaccine effectively prevented the disease.

—D. S. RABAGLIATI.

COLONY OF FIJI. (1953). **Department of Agriculture annual report for the year 1952.** pp. 61. Suva: Govt. Press. Coun. Paper No. 33. 5s. 6d. [Report of Senior Veterinary Officer pp. 28-32. (OHMAN, A. F.)] 1953

No serious epizootic diseases have entered the Colony. A new Jersey herd has been established at the principal agricultural station, Koronivia.

A start was made with a new pig scheme for Fijians. It involves the sub-division of approx. 5 acres of land into 12 paddocks with growing crops which the pigs will root.

Tuberculin testing in registered dairy herds was continued. The over-all incidence of re-

actors is now 1.6%. The total of calves vaccinated with *Br. abortus* Strain 19 was 1,087.

The sheep population of the Colony is practically nil, and it has been decided temporarily to defer any sheep breeding projects and concentrate on goat improvement.

One additional slaughter house was instituted which brings the total up to three. Statistical tables on the work of the department are given.—D. S. RABAGLIATI.

UGANDA PROTECTORATE. (1954). **Annual Report of the Department of Veterinary Services and Animal Industry for the year ended 31st December, 1953.** [RANDALL, J. B.] pp. 47. Entebbe: Govt. Printer. Shs. 2/25. 1939

Twelve thousand cattle were immunized against ANTHRAX. BLACKLEG is endemic. HAEMORRHAGIC SEPTICAEMIA and TUBERCULOSIS occur among the long horned Ankoli cattle.

TRYPANOSOMIASIS occurred in every district; 217,000 cattle were treated with antrycide dimethyl sulphate. EAST COAST FEVER is endemic in all districts except Teso and Karamoja. Malnutrition increases losses among infected calves.

FOOT AND MOUTH DISEASE occurs in all areas except Nile, Acholi and Kigezi. RABIES was confirmed in Tororo township; 286 dogs were vaccinated. In Karamoja where RINDERPEST is enzootic, 38,250 cattle were immunized against the disease. In the past four years 80% of cattle are estimated to have become immune, either naturally or by inoculation. In East Acholi, Kenya lapinized vaccine after 12 months' cold storage failed to give solid immunity.

There are sections on animal husbandry, animal industry, experiment farms, and the animal health research centre.

—J. A. GRIFFITHS.

ZANZIBAR PROTECTORATE. (1953). **Annual Report of the Department of Agriculture 1952.** [BRIANT, A. K.] pp. 29. Zanzibar: The Government Printer. 2s. 1840

No outbreaks of contagious disease occurred except in poultry and these were considered by the veterinary officer to be due to faulty husbandry.

By far the most important disease which occurred was TRYPANOSOMIASIS in cattle; excellent results were obtained by the injection of antrycide methyl sulphate by the mobile veterinary unit. Dipping for the control of

EAST COAST FEVER was regularly carried out in commercial dairy herds, but peasant owners were averse to bringing their stock for dipping. EAST COAST FEVER is by far the most serious calf disease, being responsible for more deaths than all other diseases put together.

Strong measures to enforce dipping and tick eradication in the face of bitter opposition from Africans are not carried out, for it is argued that a 90% immunity to an endemic disease is well purchased for the loss of 10% of the calves.—D. S. RABAGLIATI.

BOOK REVIEWS

BURROWS, W. [Professor of Bacteriology, University of Chicago.] (1954). *Textbook of microbiology*. pp. xix+824. Philadelphia (& London): W. B. Saunders Co. 16th Edit. 55s. **1841**

This is the sixteenth edition in 46 years of a textbook which has proved to be popular, sound and well produced. Beginning with a chapter on the history and development of microbiology, it goes on to deal with bacteria and bacterial diseases, epidemiology, and the special bacteriology of water, sewage, milk and food. There follow chapters on fungi, spirochaetes, parasites of medical importance (protozoa and metazoa), rickettsia, viruses and bacteriophages. Almost every page carries references to the literature in the form of footnotes, and the text is illustrated with an abundance of excellent figures which include many fine electron photomicrographs. Three well known specialists—a virologist, a parasitologist and a biochemist—have contributed chapters dealing with their own fields of work, but in the main the book represents the author's own labours.

The emphasis throughout is on micro-organisms of medical importance, but there are many references to disease in animals and these are concise and accurate. The book contains more detail than medical students require and not enough for the specialist research worker in a narrow field: its special virtue is the broad picture it gives of the whole subject at a standard appropriate to the advanced student and with a most valuable selection of key references to every subject with which it deals. The text shows evidence of very careful editing and proof correction, and errors are rare. The reference to Figure 30 in the text (page 211) should, however, be to Figure 29: there is need for a text reference to Figure 30.

This is a book which can be confidently recommended to microbiologists everywhere.

—E. G. WHITE.

KAUFFMANN, F. [Chief, International Salmonella and Escherichia Centre, State Serum Institute, Copenhagen.] (1954). *Enterobacteriaceae. Collected studies on*

Salmonella, Arizona, Escherichia (including Alkalescens-Dispar and Bethesda-Ballerup), Klebsiella, Cloaca, Hafnia, Shigella, Proteus and Providencia. pp. 382. Copenhagen: Ejnar Munksgaard. 2nd Edit. [In English.] **1842**

This second edition of this book, first published in 1951 [V.B. 22, 631] has been revised in accordance with the Report of the Enterobacteriaceae Subcommittee of the Nomenclature Committee of the International Association of Microbiologists to the International Congress of Microbiology in Rome (1953). Some alterations in the grouping of these organisms have been made. The section on the Bethesda-Ballerup group is included with the *Escherichia freundii* species. The genus *Klebsiella* now includes *Aerobacter aerogenes*, and *Aerobacter cloacae* is classified separately under a new genus, *Cloaca*. A section is devoted to the new genus *Hafnia* (type species *H. alvei*). The extensive section devoted to the genus *Salmonella* includes a revised list of serotypes and a section on transduction (the transference of hereditary properties from one type to another by means of culture filtrates containing bacteriophage).

The book is clearly printed, well bound and includes 102 tables, some 450 references and an extensive index. It is indispensable to those concerned with the identification and classification of the Enterobacteriaceae.

—A. BUXTON.

— (1955). *Psittacosis. Diagnosis, epidemiology and control*. [Edited by: BEAUDETTE, F. R.] pp. xvi+240. New Brunswick, N.J.: Rutgers University Press. \$5.00. **1843**

This book, edited by Beaudette who in a foreword disclaims any special knowledge of psittacosis, consists of 16 papers contributed by different authors to a symposium held in New York in 1953. The papers deal with subjects such as the history of psittacosis; the pathology; the diagnosis; serological procedures in birds; chemotherapy; U.S. quarantine regulations; and there are separate papers on the disease as it occurs in a variety of hosts

such as turkeys and fowls; pigeons, both wild and domestic; ducks; sea-birds; zoo animals; and sporadic encephalomyelitis of cattle. There is considerable emphasis on epidemiological aspects and the transmission of infection to man. There is also an account of the discussions which followed the various papers. The book is a very useful and timely summarization of knowledge on psittacosis and related infections.—M.C.

HACKETT, C. J. [Lately Director, Wellcome Museum of Medical Science, London.] (1954). **Manual of medical helminthology.** pp. ix+330. London: Cassell & Co., Ltd. 18s. 6d. 1844

This book, intended for use by doctors in the tropics, is based on accounts which accompany exhibits of helminths in the Wellcome Museum of Medical Science. Each helminth is described separately under the following headings:—history of discovery of the parasite; morphology; life cycle; epidemiology; symptoms; diagnosis; treatment; prevention. There are tables for the differentiation of worm eggs, snails, scolices, and microfilariae, and there are charts showing the classification of helminth parasites. It is a very concise and pocket-sized text.—R.M.

— (1954). **International review of cytology. Vol. III.** [Edited by: BOURNE, G. H. & DANIELLI, J. F.] pp. 530. New York: Academic Press, Inc.; London: Academic Books, Ltd. \$9.50. 1845

This volume has no preface. It consists of thirteen reviews of different aspects of cytology, each written by a specialist and well documented with references. The authors come from many countries and their styles of writing vary widely, as do the lengths of the reviews. The subjects include cell nutrition, the mast cell, elastic tissue and the composition of the nerve cell.

The readability of the articles ranges from pleasing to tolerable, the latter applying to one or two rather stilted translations. This is a standard review text for cytologists, as *Physiological Reviews* is for the physiologist, and prepared by the British editors for the International Society for Cell Biology. All who are concerned with cytological work will wish to have this series of volumes available for reference, even if they cannot afford to buy them.

—E. G. WHITE.

NICKELL, R. [Professor of Anatomy, Hanover Veterinary College.] SCHUMMER, A. [Professor of Anatomy, Justus Liebig Univer-

sity, Giessen.] SEIFERLE, E. [Professor of Veterinary Anatomy, University of Zürich.] (1954). **Lehrbuch der Anatomie der Haustiere. Band I. Bewegungsapparat. [Textbook of anatomy of domestic animals. Vol. I. Apparatus of locomotion.]** pp. xv+502. Berlin (& Hamburg): Paul Parey. DM 78. 1846

The veterinary, indeed the biological, world has become accustomed to receiving anatomical tomes from German and Swiss anatomists, and this new textbook, so far as is indicated from Volume I, is entitled to a place alongside the best of those emanating from the Ellenberger-Baum - Schmaltz - Zietzschmann - Ackerknecht - Grau Schools. Incidentally the book is dedicated to Zietzschmann.

That it should deal only with the skeletal and muscular systems, and their connecting structures, may at first thought be disturbing as one imagines the anatomist must no longer regard these in isolation: but more is to follow, and the concluding chapter of this volume styled "Statics and Dynamics" most excellently sums up the *raison d'être* of the components of the locomotory apparatus. In this chapter the state of the domestic species at rest and in movement is illustrated and described, the key-point being the centre of gravity of four-legged species.

Following the introduction, the skeleton is reviewed in general and according to species. The bones are described in a detail perhaps beyond the needs of the student, but it is difficult to see how they could be described otherwise, and it may anyway be regarded as useful reference material. The arrangement of the section devoted to joints is presented according to the dictates of growth and function, and it is interesting to see the conclusion that, within any terminology, a joint must be regarded as one which moves or one which does not. The muscular system is dealt with on a comparative basis, and it is to be appreciated that reference to the peripheral nervous system is incorporated in this chapter. More detail will no doubt follow in Volume III in which the nervous system is to be considered, but it is right for the pattern of innervation to be discussed alongside consideration of muscle form. The aforementioned chapter on statics and dynamics completes the picture.

There is no bibliography although reference is made to other authors from acknowledged diagrams. This is perhaps unfortunate, but as the book is intended for students it is understandable, and the loss to the researcher

and teacher is amply compensated for by the stimulus they will receive to seek references for themselves.

The coloured illustrations, in the Schmaltz tradition, are good. The usual language difficulty to those who do not know German is present, but it may confidently be said that this book will be referred to by many teachers in English-speaking schools for the benefit of the students, and that it should be found in every library.—C. W. OTTAWAY.

WAY, R. F. [Assistant Professor of Anatomy in the University of Pennsylvania, School of Veterinary Medicine.] (1954). **The anatomy of the bovine foot: a pictorial approach.** pp. 56. Philadelphia, Pa.: University of Pennsylvania Press; (London: Geoffrey Cumberlege, Oxford University Press). 32s. 1847

The principle advanced by the author is that sketch records of dissected parts provide basically the correct way of learning anatomy. To this end a series of black and white illustrations of structures of the fore and hind foot, mostly of the metacarpal and metatarsal regions, is depicted and briefly discussed.

The academician may be disappointed at the absence of coloured drawings, and the functionalist that little regard is paid to the importance of factual knowledge from his angle; nevertheless it may rightly be argued that the book presents other features of interest to the clinician for whom it is primarily intended. The principle is sound, the method experimental, and it is hoped the author will think twice and present further evidence of his idea.

—C. W. OTTAWAY.

UDALL, D. H. [Professor of Veterinary Medicine and Superintendent of the Ambulatory Clinic, Emeritus, in the New York State Veterinary College at Cornell University.] (1954). **The practice of veterinary medicine.** pp. x+812. London: Baillière, Tindall & Cox. 6th Edit. 65s. 1848

Accounts of the following conditions have been added to the sixth edition of this work:—atrophic rhinitis of pigs; pneumonia in sheep; transmissible gastro-enteritis in piglets; infectious hepatitis in horses; haemoglobinaemia in cattle; copper deficiency in cattle and sheep; leptospirosis; scrapie and bluetongue in sheep; hyperkeratosis in cattle; poisoning with trichloroethylene-extracted soya bean meal, and displacement of the abomasum in cattle. Another addition is a table giving the normal constituents and chemical composition of the blood of farm animals.

Sections dealing with caustic alkali poisoning, and carbon tetrachloride poisoning have been deleted and "iron deficiency", now known to be cobalt deficiency, is dealt with as such. As a result of these changes this book remains the most up-to-date work in English on the diseases of farm animals.—R.M.

— (1954). **Methods in medical research.** Vol. VI. [Edited by: STEELE, J. M.] pp. xiii+271. Chicago, Ill.: The Year Book Publishers, Inc. \$7.00. 1849

This series is well established and deservedly enjoys a high reputation, especially in the laboratory, for they are intended for the bench rather than the library. This volume contains four articles on methods of studying human genetics, five on methods in environmental medical research, thirteen on statistical methods, and four on the design and construction of metabolism cages for rats, mice, dogs and monkeys. Each section is written by an acknowledged authority and is documented with references. These volumes are invaluable and should be accessible to everyone engaged in medical or veterinary research.—E. G. WHITE.

MANN, T. [Reader in Physiology of Animal Reproduction, in the University of Cambridge.] (1954). **The biochemistry of semen.** pp. xiv+240. London: Methuen & Co., Ltd. (New York: John Wiley & Sons, Inc.) 16s. 1850

This is a scholarly book, deserving high praise. Only in a minority of the chapters does the mass of biochemical technicalities tend to bewilder the non-specialist. Some of the plates represent very striking feats of microscopy. Each of the nine chapters deals with a separate biochemical aspect, and involves the discussion of results from a variety of species, by no means all mammalian. The practical aspects of bull seminology are given due prominence, and the book will undoubtedly be of great service to veterinarians working in this field. The biochemical pathology of semen has scarcely been investigated, but the author's own researches plus the results of others' work as here assembled, show that the available techniques and the knowledge of the normal necessary for this project, are now adequate for a start to be made.

The bibliography of about a thousand references is monumental.

It is most refreshing and salutary to read, chapter by chapter, of the successive contributions to knowledge in this sphere made in the eighteenth and nineteenth centuries.

—F. L. M. DAWSON.

TAVERNIER, H. [Docteur Vétérinaire.] (1955). *Guide de pratique obstétricale chez les grandes femelles domestiques.* [Guide to practical obstetrics in large animals.] pp. 375. Paris: Vigot Frères. 2nd Edit. Fr. 3000. 1951

Because the first edition of this guide was published during the war, the present edition is the first to be freely available outside France. It is rather more comprehensive than the title 'guide' indicates, and being thoroughly up-to-date, is of value to the veterinary surgeon as well as the student. The text is divided into three sections, the first of which deals with the normal anatomy and physiology of reproduction in the mare and in the cow, surgery of the female reproductive tract, and normal and pathological pregnancy.

The second part deals with parturition and dystokia, while normal and pathological sequelae to parturition are described in the third part. The whole is very well illustrated by 335 photographs or drawings, most of them

original. The names of authors are quoted throughout, but for economy of space the source of their work is not given. The paper and binding of the book are of very good quality.—R.M.

LERNER, I. M. [Professor at the University of California in Berkeley.] (1954). *Genetic homeostasis.* pp. vii+134. Edinburgh (& London) Oliver & Boyd. 12s. 6d. 1952

This book is of greater interest to the specialist geneticist than to the practical breeder. To a large extent it deals with heterosis and the importance of the heterozygote. Reasons for the superiority of heterozygotes are discussed and the evidence detailed. The term "homeostasis" refers to the property of a population which enables it to resist change and return to a mean value. Older ideas of the value of uniform inbred stocks are changing and a realization of the importance and value of heterosis gaining ground.

These subjects are very fully discussed.

—M.C.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

BLOCK, R. J., DURRUM, E. L. & ZWEIG, G. (1955). *A manual of paper chromatography and paper electrophoresis.* pp. 484. New York: Academic Press, Inc.; (London: Academic Books Ltd.) \$8.00.

BRIEN, P., CORDIER, R., DALCQ, A., DEVILLIERS, C., FLORKIN, M., GÉRARD, P., LISON, R., MATTHEY, R., PASTEELS, J., PIVETEAU, J., ROCHON-DUVIGNEAUD, A. & STÉPHAN, F. (Contributors). (1954). *Traité de zoologie, anatomie, systématique, biologie.* Tome XII. *Vertébrés: Embryologie, grands problèmes d'anatomie comparée, caractéristiques biochimiques.* [Treatise of zoology. Vol. XII. Vertebrates.] pp. 1145. Paris: Masson et Cie. Fr. 9800 & 10550.

HEUSER, G. F. (1955). *Feeding poultry.* pp. viii+632. New York: John Wiley & Sons, Inc.; (London: Chapman & Hall, Ltd.) 2nd Edit. 60s.

HIERONYMI, E. (Revised by). (1955). Schmid. *Die Parasitären Krankheiten der Haustiere. Diagnose und Bekämpfung.* [Schmid's Diagnosis and control of parasitic diseases of livestock.] pp. viii+229. Berlin (& Hamburg): Paul Parey. 6th revised edit. DM 26.80.

KOLLER, R. (1952). *Künstliche Befruchtung in der Landwirtschaft der Vereinigten Staaten.*

[Role of artificial insemination in agriculture in the U.S.A.] pp. 99. Vienna: Österreichisches Produktivitäts-Zentrum.

LÖFFLER, W., MORONI, D. L. & FREI, W. (1955). *Die Brucellose als Anthro-Zoonose. (Febris undulans). Eine zusammenfassende Darstellung für Ärzte und Tierärzte.* [Brucellosis as a disease transmissible from animals to man.] pp. xii+193. Berlin, (Göttingen & Heidelberg): Springer-Verlag. DM 29.60.

ROOTS, E., HAUPT, H. & HARTWIG, H. (1955). *Veterinärhygiene. Eine Lehrbuch der Gesundheitspflege für Studierende, Tierärzte und Landwirte.* [Textbook of veterinary hygiene.] pp. vii+229. Berlin (& Hamburg): Paul Parey. DM 23.80.

RUNNELLS, R. A. (1954). *Animal pathology.* pp. xiii+718. Ames, Iowa: The Iowa State College Press. 5th Edit. \$8.50.

SCHRAMM, G. (1954). *Die Biochemie der Viren.* [The biochemistry of viruses. Vol. V.] pp. viii+276. Berlin, (Göttingen & Heidelberg): Springer-Verlag. DM 36.

WUNDERLY, C. (1954). *Die Papierelektrophorese. Methode und Ergebnisse.* [Paper electrophoresis.] pp. 127. Aarau: Verlag H. R. Sauerländer & Co. Swiss Fr. 10.

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